

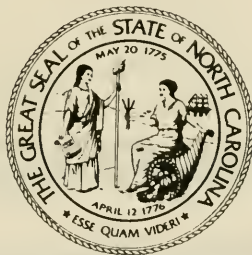




# **LEGISLATIVE RESEARCH COMMISSION**

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## **HIGH-LEVEL RADIOACTIVE WASTE DISPOSAL**



**REPORT TO THE  
1987 GENERAL ASSEMBLY  
OF NORTH CAROLINA**

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STATE OF NORTH CAROLINA  
LEGISLATIVE RESEARCH COMMISSION  
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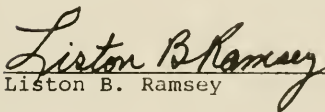
December 12, 1986

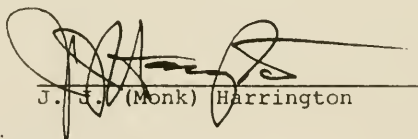
TO THE MEMBERS OF THE 1987 GENERAL ASSEMBLY:

The Legislative Research Commission herewith reports to the 1987 General Assembly on the matter of high-level radioactive waste disposal and transportation in the State. The report is made pursuant to Chapter 790 of the 1985 General Assembly (1985 Session).

This report was prepared by the Legislative Research Commission's Committee on High-Level Radioactive Waste Disposal and is transmitted by the Legislative Research Commission for your consideration.

Respectfully submitted,

  
Liston B. Ramsey

  
J. J. (Monk) Harrington

Cochairmen  
Legislative Research Commission



## PREFACE



## PREFACE

The Legislative Research Commission, authorized by Article 6B of Chapter 120 of the General Statutes, is a general purpose study group. The Commission is cochaired by the Speaker of the House and the President Pro Tempore of the Senate and has five additional members appointed from each house of the General Assembly. Among the Commission's duties is that of making or causing to be made, upon the direction of the General Assembly, "such studies of and investigation into governmental agencies and institutions and matters of public policy as will aid the General Assembly in performing its duties in the most efficient and effective manner." G.S. 120-30.17(1). The membership of the Legislative Research Commission is listed in Appendix A.

At the direction of the 1985 General Assembly, the Legislative Research Commission has undertaken studies of numerous subjects. These studies were grouped into broad categories and each member of the Commission was given responsibility for one category of study. The cochairmen of the Legislative Research Commission, under the authority of General Statute 120-30.10(b) and (c), appointed committees consisting of members of the General Assembly and the public to conduct the studies. Cochairmen, one from each house of the General Assembly, were designated for each committee.

The study of High-Level Radioactive Waste Disposal was

authorized by Section 1(17) of Chapter 790 of the 1985 Session Laws (1985 Session). That act states that the Commission may consider House Bill 1373 and Senate Bill 655 in determining the nature, scope, and aspects of the study. Section 1 of House Bill 1373 reads: "The Legislative Research Commission may study the U.S. Department of Energy's plans to site a repository in the Eastern United States, including North Carolina, the storage of spent nuclear fuel in holding ponds at nuclear power plants and the transportation of radioactive waste and may recommend appropriate actions to protect human health, water supplies, property and the environment." Section 1 of Senate Bill 655 contains similar language. Chapter 790, House Bill 1373, and Senate Bill 655 are included in Appendix A.

The Legislative Research Commission grouped this study in its environment area under the direction of Representative Bruce Ethridge. The Committee was chaired by Senator Charles Hipps and Representative Gerald Anderson . The full membership of the Committee is listed in Appendix A of this report.

## BACKGROUND





## BACKGROUND

Pursuant to the Nuclear Waste Policy Act of 1982 (NWPA), signed into law by the President on 7 January 1983, the United States Department of Energy was directed to provide for the development of mined geologic repositories for the disposal of spent nuclear fuel and high-level waste; to submit a proposal to Congress to develop monitored retrievable storage facilities as a part of the integrated system which includes geologic repositories; and to establish a program of research, development, and demonstration for the disposal of spent fuel and high-level waste.\*

---

\*"Spent nuclear fuel" is fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. Spent fuel is thermally hot and highly radioactive. "High-level waste" is the highly radioactive material resulting from the reprocessing of spent nuclear fuel and the waste produced primarily by defense activities. "Monitored retrievable storage facilities" are facilities that could package spent fuel and prepare it for shipment at a central location, as well as facilities that could provide temporary storage prior to shipping to a permanent repository.

The NWPA also sets out a schedule for siting, construction, and operation of one or more repositories. Selection of a site for the first repository is required by the NWPA. While the NWPA does not authorize the actual construction of a second repository, it does require the Department of Energy to carry out the siting and development activities essential to preparation for such a repository.

In February 1983, the Department of Energy formally identified nine sites as being potentially suitable for the first repository. Seven of the sites were in salt, one was in basalt, and one was in tuff. The number of sites was narrowed to three on May 28, 1986. The three sites are Yucca Mountain, Nevada; Deaf Smith County, Texas; and Hanford, Washington. The selection of a first repository is currently tied up in litigation.

In 1983 the Department of Energy issued a national survey report on crystalline rock formations which identified seventeen states as possible sites for a second repository. North Carolina was among these seventeen states. During the 1985 Session, in response to North Carolina's involvement in the screening process for a second repository, Senator Charles Hips introduced Senate Bill 655, "An Act to Authorize the Legislative Research Commission to Study Plans for Storage of High-Level Radioactive Waste." Representatives David Diamont and Marshall Hall introduced a similar bill in the House. In Chapter 790 (SB 636) of the 1985 Session Laws, the Legislative Research Commission created the High-Level Radioactive Waste Disposal Study Committee.

On 17 January 1986 the Department of Energy narrowed the process for a second repository site by identifying twelve areas as proposed potentially acceptable sites. Two of these sites were

in North Carolina: (1) the Rolesville site involving Franklin, Johnston, and Wake Counties; and (2) the Elk River site involving Buncombe, Haywood, and Madison Counties.

On 28 May 1986 the Department of Energy announced that it was postponing indefinitely site-specific work for a second repository and that areas previously identified for a possible second repository were no longer under active consideration. The Department of Energy emphasized that in light of uncertain projections of spent fuel generation and the decline in this generation, the first repository would be adequate in the foreseeable future and that expending hundreds of millions of dollars on site identification of a second repository would be unsound fiscal management.



COMMITTEE PROCEEDINGS



## COMMITTEE PROCEEDINGS

The High-Level Radioactive Waste Disposal Study Committee met on the following dates: January 3, 1986; April 3, 1986; April 16, 1986; October 23, 1986; November 14, 1986; and December 1, 1986. Two major topics considered by the Committee were the State's involvement in the siting of a high-level waste repository and in the transportation of high-level waste.

### January 3, 1986 Meeting

At this organizational meeting Ms. Martha Walston, Committee Counsel, presented an overview of the Nuclear Waste Policy Act of 1982 (NWPAA) and of North Carolina's role in carrying out the NWPAA.

Mr. Steve Conrad, Director of Land Resources in the Department of Natural Resources and Community Development, reported on North Carolina's position on the siting and selection of a second repository. He stated that the Governor is in the process of appointing an advisory committee to oversee any site selection in North Carolina and that the State's position at this time is responsible opposition.

Mr. Bill Holman, representing the Conservation Council of North Carolina and the North Carolina Chapter of the Sierra Club, urged the Committee to recommend legislation requiring the Department of Energy to obtain state permits before exploring or mining crystalline rock in North Carolina. Mr. Holman also urged regulations for the transportation of radioactive waste in the State.

Ms. Janet Hoyle, representing the Blue Ridge Environmental Defense League, expressed her concern about transporting

radioactive waste and the containers used for this purpose.

The remarks of Ms. Walston and Mr. Holman, and a diagram of a high-level waste repository appear in Appendix B.

April 3, 1986 Meeting

On January 16, 1986 the Department of Energy notified North Carolina that two areas in the State, the Rolesville site and the Elk River site near Asheville, had been identified as potentially acceptable sites for a second high-level waste repository. The Committee therefore decided to hold the April 3, 1986 meeting at the Elk River site. The members first met with residents of the Sandy Mush Community, located within the site. These residents expressed the need to be informed of action at the state and federal levels, the need for coordination of efforts and resources in opposition to the site selection, and the desire that the high-level issue not become a partisan one. The residents raised concerns about the site selection adversely affecting tourism, land values, religion, and preservation of community life in general. Lieutenant Governor Bob Jordan, members of the Committee, and legislators representing the counties within the Elk River site addressed the residents.

After meeting in the Sandy Mush Community, the Committee held an evening meeting at the Haywood County Courthouse in Waynesville. Mr Ed Israel, Executive Director of Western North Carolina Tomorrow, spoke on the socio-economic impact a high-level radioactive waste repository would have on western North Carolina.

Dr. Steven Yurkovich, Professor of Geology at Western Carolina University, commented on the Department of Energy's geologic data for the two North Carolina sites. He emphasized that the data is sketchy and that important data was either



ignored or used for the convenience of the researchers.

Dr. Lynn Muchmore, Assistant Secretary for the North Carolina Department of Natural Resources and Community Development, gave an update on the siting of a second repository in North Carolina. He emphasized that the position of the Executive Branch is to oppose and reverse the Department of Energy decision on the two proposed sites in the State.

Gordon B. McKinney, a member of the Western Carolina University History Department, stated that people are already suffering psychological damage and that they believe state government is part of the problem.

Dr. Robert Earnest spoke on behalf of the citizens of Haywood and Madison Counties, two counties located within the Elk River site. Dr. Earnest stated that as a result of the site selection process citizens within these two counties were experiencing problems with decreased property values, and with future development in tourism, real estate, and industry. He asked the Committee to study legislation in other states which makes the Department of Energy more accountable for its actions.

The Committee heard comments from the audience before the meeting adjourned. The remarks of Mr. Israel, Dr. Yurkovich, Mr. McKinney, and Dr. Earnest appear in Appendix C.

#### April 16, 1986 Meeting

The Committee was first given an overview of transportation of high-level radioactive waste by Mr. Robert Jefferson, who has broad experience in many nuclear technology areas. Mr. Jefferson stressed the safety of such transportation. He indicated that from 1971 through March of 1985 there had been 167 vehicular

accidents in the country involving radioactive materials; and that in the forty years the country has been transporting radioactive material the death record is zero. Mr. Jefferson showed the Committee two films. The first film depicted four full scale impact tests and a burn test of the casks used to transport the material. These tests tended to demonstrate how safe and rugged the casks are. The second film was a British test showing a diesel locomotive plowing head-on into a derailed flask at 100 miles per hour with no damage to the flask.

Ms. Edythe McKinney, Director Of the Planning and Assessment Division in the Department of Natural Resources and Community Development, apprised the Committee on the Governor's meeting with the U.S. Department of Energy on April 15. At that meeting the Department of Energy received North Carolina's response to the Department of Energy Draft Area Recommendation Report. Ms. McKinney stated that the State's response was that the two North Carolina sites should be eliminated. A summary of the State's response is attached as Appendix D. The Committee requested Ms. Mckinney to notify them of future meetings of an Advisory Committee on the Crystalline Rock Nuclear Repository and a Technical Review Committee appointed by the Governor on January 16, 1986.

Ms. Martha Walston, Committee Counsel, then reported on the high-level waste legislation passed by other states under consideration for the second repository. See Appendix E.

The Committee discussed the need to encourage people to vote on the nuclear waste referendum passed by the General Assembly on February 18, 1986 during the Special Session. This referendum, which is to appear on the May 6th ballot, asks the voters to vote FOR or AGAINST the location within the State of North Carolina of

a high-level radioactive waste and spent nuclear fuel disposal site. A motion was made and passed by the Committee that "this Committee requests the Governor, the Lt. Governor and the Speaker of the House to hold a joint press conference to explain the wording of the nuclear waste referendum as it will appear on the May 6th ballot in an effort to eliminate any confusion and to encourage statewide coverage by the media, particularly in non-affected areas." Copies of the referendum bill and a letter requesting a press conference are in Appendix F. (The press conference was held on April 29, 1986.)

At the close of the meeting, the Committee members toured the Rolesville site and met with residents of the area to hear their concerns.

#### October 23, 1986 Meeting

Due to the May 28, 1986 announcement by the Department of Energy that it was postponing indefinitely site-specific work for a second repository and that areas previously identified for a possible second repository were no longer under active consideration, the Committee turned its attention to transportation of high-level waste through the State. At the October meeting, the Committee was informed of the roles of the Radiation Protection Commission, the Department of Crime Control and Public Safety, and the State Department of Transportation in the transportation of high-level waste in the State.

Mr. Dayne Brown, Chief of the Radiation Protection Section of the Department of Human Resources, stated that the Radiation Protection Commission is responsible for the promulgation of rules governing the licensing, registration, receipt, possession, use transfer, transportation, and disposal of all radiation sources in

North Carolina. Mr. Brown pointed out that prior notification to the State Highway Patrol is required for any shipment of high-level radioactive waste, spent nuclear fuel, or other nuclear waste requiring Department of Transportation Type B (accident resistant) containers. The Highway Patrol provides confidential copies of all notifications to the Radiation Protection Section. The Section makes periodic inspections of these shipments. To date, there have been no recorded accidents involving either high-level radioactive waste or spent nuclear fuel shipments in the State.

Mr. Joe Myers, Director of the Division of Emergency Management within the Department of Crime Control and Public Safety, informed the Committee that his Division directs the SERT (State Emergency Response Team), a team that assists local governments in responding to radiological and other hazardous incidents on the highways. The Division is involved with 96 counties in developing local emergency response plans.

Major Bill Ethridge, Hazardous Materials Officer for the Highway Patrol, stated that there were over 800 mobile units stationed across the State with trained troopers and radiological emergency kits issued to them to respond to emergencies.

Mr. Gerald Fleming, Director of Occupational Safety and Emergency Planning for the State Department of Transportation, indicated that his Division has over 600 people monitoring radiation in every county.

Mr. John Rozier, with the Southern States Energy Board (SSEB), informed the Committee that the SSEB is currently reviewing issues relating to the transportation of spent fuel and high-level waste and to the impact of transportation on the

southern states.

Ms. Gay Hashbarger, a member of the Governor's Safe Growth Team in Tennessee, spoke to the Committee on the proposed monitored retrievable storage facility (MRS) in Tennessee and its impact on transportation. The results of a study by the State of Tennessee are that the Department of Energy has not demonstrated a need for the MRS and that there is no technical basis for the Tennessee site selection. Tennessee further found that the alleged transportation benefits of an MRS, such as shorter trips, fewer shipments and less radiological risk, could be provided by improving transportation equipment and logistics without constructing an MRS.

Ms. Janet Hoyle then presented the Blue Ridge Environmental Defense League's recommendations to the Committee.

The remarks of Mr. Brown, Mr. Rozier, and Ms Hoyle appear in Appendix G.

#### November 14, 1986 Meeting

At the request of the Committee, the Radiation Protection Section, the Department of Crime Control and Public Safety, and the Occupational Safety and Emergency Planning Division within the State Department of Transportation presented recommendations for high-level waste transportation in the State. Mr. Brown, with the Radiation Protection Section, emphasized that the Radiation Protection Commission has the authority to determine alternate preferred routes for high-level waste transportation and would look at such routes if requested to do so. Mr. Myers from the Department of Crime Control and Public Safety informed the Committee that his Department feels that current laws are adequate. Mr. Fleming from the Department of Transportation also

had no specific recommendations, but indicated that the Division of Highways is on record in support of the Radiation Protection Commission designating any needed alternate routes. The remarks of Mr. Myers and Mr. Fleming appear in Appendix H.

The Committee next reviewed a draft joint resolution which states North Carolina's opposition to the selection of areas within the State for consideration in the siting of a high-level radioactive waste repository pursuant to the Nuclear Waste Policy Act of 1982; and urging Congress to repeal the provisions of the Act regarding the site-selection work on a second high-level radioactive waste repository. The Committee also reviewed two draft recommendations: (1) that the Radiation Protection Commission shall consider alternate preferred highway routes for the transportation of high-level radioactive waste in the State, and (2) that the North Carolina General Assembly may consider entering into an agreement with neighboring states regarding the transportation of high-level radioactive waste. The Committee then voted to recommend the joint resolution and the two recommendations.

December 1, 1986

At the final meeting the Committee voted to adopt the report. See Appendix I for the recommended legislation.

## FINDINGS AND RECOMMENDATIONS





## FINDINGS AND RECOMMENDATIONS

RECOMMENDATION 1: The North Carolina General Assembly should pass a joint resolution stating North Carolina's opposition to the selection of areas within the State for the siting of a high-level radioactive waste repository; and urging Congress to repeal the provisions of the Nuclear Waste Policy Act of 1982 regarding the site-selection work on a second high-level radioactive waste repository.

The State of North Carolina reviewed the Department of Energy's Draft Area Recommendation Report, which identified the Rolesville area and the Elk River area as potential sites for a second repository, and found significant inadequacies in the geologic characterizations, environmental characterizations, and methodology of the Report. On May 28, 1986 the Department of Energy announced that it was postponing indefinitely site-specific work for a second repository and that areas previously identified for a possible second repository were no longer under active consideration. The Department of Energy noted that due to a decline in spent fuel generation, the first repository would be adequate in the foreseeable future. Since the Department of Energy found only two sites in North Carolina as potentially suitable for a second repository, since the State carefully studied these two sites and found them geologically and environmentally unsuitable, since the Department of Energy has indefinitely postponed the site-selection work for a second repository because a second repository is not needed, and since questions have been raised concerning the Department of Energy's

decision to postpone work on the siting of a second repository without action by Congress; the High-Level Radioactive Waste Disposal Study Committee recommends the resolution set out in Appendix I.

RECOMMENDATION 2: The Radiation Protection Commission, pursuant to the authority provided in G.S. 104E-15 of the Radiation Protection Act, shall consider alternate preferred highway routes for the transportation of high-level radioactive waste in the State. Any alternate route shall be in accordance with the U.S. Department of Transportation guidelines, and shall be selected after comparing various routes and examining the risks involved and after consulting with neighboring jurisdictions to ensure consideration of all impacts and the continuity of designated routes. The Commission shall also explore the use of rail as a primary means of transporting high-level radioactive waste.

U.S. Department of Transportation regulations require carriers of radioactive and other hazardous materials to use the most direct interstate highway and, where possible, avoid large cities by using an interstate route or beltway. A state, however, is allowed to designate alternate routes to replace or supplement the interstate system. The Radiation Protection Commission, under the provisions of G.S. 104E-15, is given broad authority in the area of regulating radioactive waste transportation. This authority includes the designation of routes but has not been exercised. The High-Level Radioactive Waste Disposal Study Committee recommends that the Radiation Protection Commission consider alternate routes, particularly in situations where the use of a preferred highway route over an alternate route appears to increase the risk of accidents and radiation exposure. The Commission should also explore rail routes, since the use of rail would result in fewer shipments of high-level radioactive waste.

RECOMMENDATION 3: The North Carolina General Assembly may consider entering into an agreement with neighboring states regarding the transportation of high-level radioactive waste. This agreement should set out uniform inspection criteria and fee schedules, and alternate preferred routes.

The High-Level Radioactive Waste Disposal Study Committee finds that the development of inspection and fee agreements and alternate preferred routes among the neighboring states would tend to ensure consistency among state laws, reduce burdens on interstate commerce, and increase the overall safety of high-level waste transportation. The Committee finds that the need for coordination among the neighboring states becomes even more imperative in light of the Department of Energy's proposal to site an MRS in Tennessee.



## APPENDIX A



LEGISLATIVE RESEARCH COMMISSION

Senator J. J. Harrington, Cochairman  
Senator Henson P. Barnes  
Senator A. D. Guy  
Senator Ollie Harris  
Senator Lura Tally  
Senator Robert D. Warren

Representative Liston B. Ramsey, Cochairman  
Representative Christopher S. Barker, Jr.  
Representative John T. Church  
Representative Bruce Ethridge  
Representative Aaron Fussell  
Representative Barney Paul Woodard





# GENERAL ASSEMBLY OF NORTH CAROLINA

## SESSION 1985

### RATIFIED BILL

#### CHAPTER 790 SENATE BILL 636

AN ACT AUTHORIZING STUDIES BY THE LEGISLATIVE RESEARCH COMMISSION, MAKING TECHNICAL AMENDMENTS THERETO, AND TO MAKE OTHER AMENDMENTS.

The General Assembly of North Carolina enacts:

Section 1. Studies Authorized. The Legislative Research Commission may study the topics listed below. Listed with each topic is the 1985 bill or resolution that originally proposed the issue or study and the name of the sponsor. The Commission may consider the original bill or resolution in determining the nature, scope and aspects of the study. The topics are:

- (1) Continuation of the Study of Revenue Laws (H.J.R. 17-Lilley),
- (2) Continuation of the Study of Water Pollution Control (H.J.R. 141-Evans),
- (3) Adolescent Sexuality Teaching (H.J.R. 275-Jeralsds),
- (4) Continuation of the Study on the Problems of the Aging (H.J.R. 322-Greenwood),
- (5) Continuation of the Study of Municipal Incorporations (H.J.R. 389-Greenwood),
- (6) School Discipline (H.J.R. 861-Colton),
- (7) Bail Bondsmen and Bail Bond Forfeiture (E.B. 967-Watkins),
- (8) Preventative Medicine (H.B. 1052-Locks),
- (9) Life Care Arrangements (H.B. 1053-Locks),
- (10) State Personnel System (H.B. 1064-Wiser),
- (11) Long-Term Health Care Insurance (H.B. 1103-Locks),
- (12) Itinerant Merchants (H.B. 1170-Lancaster),
- (13) Manufactured Housing Zoning (H.B. 1178-Ballance; S.B. 636-Plyler),
- (14) Interest Rate Regulation (H.J.R. 1227-Evans),
- (15) Underground Storage Tank Leakage Hazards and other ground water hazards (H.B. 1281-Locks),
- (16) Mental Patient Commitments (H.J.R. 1313-Miller),
- (17) High-Level Radioactive Waste Disposal (H.B. 1373-Diamond; S.B. 655-Hipps),
- (18) Stun Guns (H.J.R. 1390-McDowell),
- (19) Continuation of the Study of Water Quality in Haw River and B. Everett Jordan Reservoir (H.J.R. 1393-Hackney),
- (20) Authority of Boards of County Commissioners in Certain Counties over Commissions, Boards and Agencies (H.J.R. 1405-Holroyd),
- (21) Superintendent of Public Instruction and State Board of Education (H.J.R. 1412-Nye),
- (22) Rental Referral Agencies (H.B. 1421-Stamey),
- (23) Child Abuse Testimony Study (S.B. 165-Hipps),
- (24) Home Schooling Programs (S.J.R. 224-Winner),
- (25) Pretrial Release (S.J.R. 297-Winner),

- (26) Inmate Substance Abuse Therapy Program (S.J.R. 317-Plyler),
- (27) Inmate Work-Release Centers (S.B. 406-Swain),
- (28) Community College System (S.B. 425-Martin),
- (29) Community Service Alternative Punishment and Prostitution (S.B. 495-Swain),
- (30) State Employee Salaries and Benefits (S.B. 514-Jordan),
- (31) State Infrastructure Needs (S.B. 541-Royall),
- (32) Commercial Laboratory Water Testing (S.B. 573-Taft),
- (33) Outdoor Advertising (S.B. 611-Thomas, R.P.),
- (34) Premium Tax Rate on Insurance Companies (S.B. 633-Hardison)
- (35) Continuation of the Study of Child Support (S.B. 638-Marvin),
- (36) Local Government Financing (S.B. 670-Rauch),
- (37) Medical Malpractice and Liability (S.B. 703-Taft),
- (38) Marketing of Perishable Food (S.B. 718-Basnicht),
- (39) Child Protection (S.B. 802-Hipps),
- (40) Legislative Ethics and Lobbying (S.B. 829-Rauch),
- (41) Satellite Courts (S.B. 850-Barnes),
- (42) Substantive Legislation in Appropriations Bills (S.B. 851-Rand),
- (43) School Finance Act (S.B. 848-Taft).

Sec. 2. Transportation Problems at Public Facilities. The Legislative Research Commission may identify and study transportation problems at public transportation facilities in North Carolina.

Sec. 2.1. The Legislative Research Commission may study the feasibility of the prohibition of investment by the State Treasurer of stocks of the retirement systems listed in G.S. 147-69.2(b)(6), or of the assets of the trust funds of The University of North Carolina and its constituent institutions deposited with the State Treasurer pursuant to G.S. 116-36.1 and G.S. 147-69.2(19) in a financial institution that has outstanding loans to the Republic of South Africa or in stocks, securities, or other obligations of a company doing business in or with the Republic of South Africa.

Sec. 3. Reporting Dates. For each of the topics the Legislative Research Commission decides to study under this act or pursuant to G.S. 120-30.17(1), the Commission may report its findings, together with any recommended legislation, to the 1987 General Assembly, or the Commission may make an interim report to the 1986 Session and a final report to the 1987 General Assembly.

Sec. 4. Bills and Resolution References. The listing of the original bill or resolution in this act is for reference purposes only and shall not be deemed to have incorporated by reference any of the substantive provisions contained in the original bill or resolution.

Sec. 5. The last sentence of G.S. 120-19.4(b) is amended by deleting the citation "G.S. 5-4" and inserting in lieu thereof the following: "G.S. 5A-12 or G.S. 5A-21, whichever is applicable".

Sec. 6. G.S. 120-99 is amended by adding a new paragraph to read:

"The provisions of G.S. 120-19.1 through G.S. 120-19.8 shall apply to the proceedings of the Legislative Ethics Committee as if it were a joint committee of the General Assembly, except that the chairman shall sign all subpoenas on behalf of the Committee.

Sec. 7. G.S. 120-30.17 is amended by adding a new subsection to read:

"(9) For studies authorized to be made by the Legislative Research Commission, to request another State agency, board, commission or committee to conduct the study if the Legislative Research Commission determines that the other body is a more appropriate vehicle with which to conduct the study. If the other body agrees, and no legislation specifically provides otherwise, that body shall conduct the study as if the original authorization had assigned the study to that body and shall report to the General Assembly at the same time other studies to be conducted by the Legislative Research Commission are to be reported. The other agency shall conduct the transferred study within the funds already assigned to it."

Sec. 8. This act is effective upon ratification.

In the General Assembly read three times and ratified, this the 18th day of July, 1985.

ROBERT B. JORDAN III

Robert B. Jordan III  
President of the Senate

LISTON B. RAMSEY

Liston B. Ramsey  
Speaker of the House of Representatives



# GENERAL ASSEMBLY OF NORTH CAROLINA

## SESSION 1985

**S****2**

SENATE BILL 655  
Second Edition Enrolled 5/29/85

Short Title: Radioactive Waste Study..

(Public)

Sponsors Senator Hipps.

Referred to: Rules.

May 16, 1985

1 A BILL TO BE ENTITLED

2 AN ACT TO AUTHORIZE THE LEGISLATIVE RESEARCH COMMISSION TO STUDY  
3 PLANS FOR STORAGE OF HIGH-LEVEL RADIOACTIVE WASTE..

4 The General Assembly of North Carolina enacts:

5 Section 1. The Legislative Research Commission may  
6 study the United States Department of Energy's plans to site a  
7 repository for high-level radioactive waste in crystalline rock  
8 sites [S-~~IN THE EASTERN PART OF THE STATE~~] North Carolina,  
9 [S-~~THE STORAGE OF SPENT NUCLEAR FUEL IN NUCLEAR POWER PLANTS~~]  
10 ~~POWER PLANTS~~] and the transportation of radioactive waste and may  
11 recommend appropriate actions to protect human health, water  
12 supplies, property and the environment.

13 Sec. 2. This act shall become effective July 1, 1985.

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GENERAL ASSEMBLY OF NORTH CAROLINA  
SESSION 1985

HOUSE BILL 1373

Short Title: LRC Study High-Level Radioactive Waste. (Public)

Sponsors: Representatives Diamont; M. Hall.

Referred to: Rules & Operation of the House.

June 12, 1985

A BILL TO BE ENTITLED

AN ACT TO AUTHORIZE THE LEGISLATIVE RESEARCH COMMISSION TO STUDY  
THE STORAGE, TRANSPORTATION AND POSSIBLE BEPOSITORY SITES FOR  
HIGH-LEVEL RADIOACTIVE NUCLEAR WASTE.

The General Assembly of North Carolina enacts:

Section 1. The Legislative Research Commission may  
study the U. S. Department of Energy's plans to site a repository  
for high-level radioactive waste in crystalline rock sites in the  
Eastern United States, including North Carolina, the storage of  
spent nuclear fuel in holding ponds at nuclear power plants and  
the transportation of radioactive waste and may recommend  
appropriate actions to protect human health, water supplies,  
property and the environment.

Sec. 2. This act shall become effective July 1, 1985.

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DISPOSAL STUDY COMMITTEE

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## APPENDIX B



The Nuclear Waste Policy Act of 1982 was enacted 7 January 1983 and confirms the responsibility of the Department of Energy for management of high-level radioactive waste. The Act directs the Department of Energy (DOE) to provide safe facilities for isolation of high-level radioactive waste from the environment in federally-owned and federally-licensed repositories. The DOE is investigating the suitability of a variety of geologic media for siting two permanent, nuclear waste repositories in accordance with the provision of the Act.

### First Repository

On 20 December 1984, the DOE released draft environmental assessments on the nine potential sites for the first nuclear waste repository. The DOE ranked the following as the first five sites: Yucca Mountain, Nevada; Deaf Smith County, Texas; Hanford, Washington; Richton Dome, Mississippi and Davis Canyon, Utah. The final environmental assessments will be issued in June 1985. In July 1985, the Secretary of Energy will nominate and recommend three sites to the President who has until September 1985 to approve the sites. The DOE will then begin construction of exploratory shafts and the installation of test equipment to determine the suitability of the sites. A draft environmental impact statement will be prepared by September 1989. The site characterization plans are to be issued in September 1985 for basalt (Washington site) and tuff (Nevada site). Shaft construction will begin in January 1986 in basalt, March 1986 in tuff, and in March 1987 in salt.

A final environmental impact statement will be issued by March 1990, and the DOE will recommend a repository site to the President who will notify Congress by June 1990. Unless the affected state or Indian tribe files a notice of disapproval on the recommended site, the designation will take effect sixty days after the President recommends the site to Congress. Congress can also override the notice of disapproval with a joint resolution. If the disapproval stands, the President has one year in which to recommend another site. The DOE will submit a repository construction authorization application to the Nuclear Regulatory Commission (NRC) in August 1990, and the NRC must issue an authorization within three years. The DOE can then begin construction of the surface and subsurface facilities in August 1993 and begin operation in February 2001.

### Second Repository

The DOE is considering crystalline rock as a potential host for the second repository. North Carolina is one of seventeen states being considered in the crystalline rock study. These states are Maine, New Hampshire, Vermont, New York, Massachusetts, Connecticut, Rhode Island, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Minnesota, Wisconsin, and Michigan. Of the 236 rock bodies identified in this study, thirty bodies have been

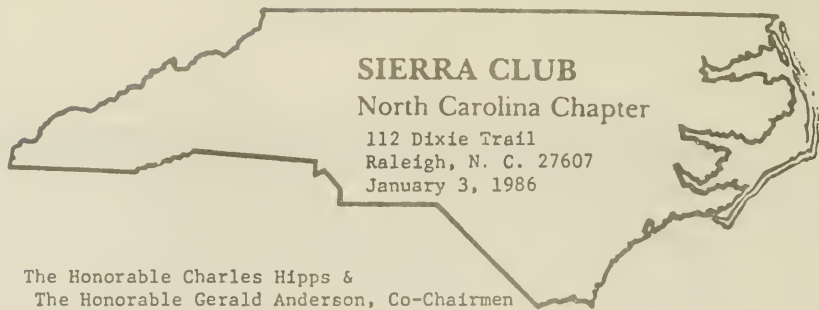
identified in North Carolina. These rock bodies include approximately one-half of North Carolina's counties, but no eastern counties are involved. In May 1983, the DOE compiled geologic characterization reports for review by the crystalline states. These initial reports contained many errors. A revised draft of the Southeastern Regional Geologic Characterization Report was issued in November 1984. The final characterization report is scheduled for the summer of 1985. The characterization reports merely provide a summary of geologic literature identifying those exposed crystalline areas potentially suitable as a repository host. During the area phase of the study, the rock bodies will undergo a screening process. The disqualifying factors and screening variables in the area phase include hydrologically significant natural resources, rock mass extent, faulting, rock and mineral resources, major ground-water discharge zones and water resources. During the screening process, environmental factors such as population density and state- and federally-protected land will also be considered.

At a briefing on high-level radioactive waste management conducted for members of the North Carolina General Assembly on 27 February 1985, Steve Conrad (Director of Land Resources with the Department of Natural Resources and Community Development) indicated that the screening process should be completed by November 1985. By May 1986, North Carolina will know if any rock bodies in the State have passed through the screening process. Those selected will be subjected to field analysis. This field analysis will last several years. By April 1989, five sites will be identified for a second repository. By July 1991, three sites will be recommended to the President. The President will recommend one site in 1996. In the most recent information received from the National Conference of State Legislatures, it appears that the Presidential recommendation to Congress for the second repository has been delayed until April 1997 with emplacement of radioactive waste in April 2006.

In North Carolina the lead state agency for the Crystalline Rock Project is the Department of Natural Resources and Community Development. The lead contact persons are Steve Conrad, Director of Land Resources; and Bill Flournoy, Chief of the Environmental Assessment Section. Before the change in administration, a High-Level Nuclear Waste Repository Task Force and Technical Advisory Committee were to be created. Their future is unclear. The State does not appropriate any funds for its high-level waste programs. It instead depends solely on its federal grant. The only existing high-level waste related legislation in North Carolina is the North Carolina Radiation Protection Act in Chapter 104-E of the General Statutes. This Act establishes the Department of Human Resources as the state radiation protection agency and creates and empowers the North Carolina Radiation Protection Commission to promulgate rules and regulations in the administration of a radiation protection program. This Act, however, would not

apply to storage of high-level waste, since this is the responsibility of the federal government under the Nuclear Waste Policy Act.

s3-088



## SIERRA CLUB

### North Carolina Chapter

112 Dixie Trail  
Raleigh, N. C. 27607  
January 3, 1986

#### Regional Groups in North Carolina

**BLUE RIDGE GROUP**  
Boone

**BROAD RIVER GROUP**  
Shelby

**CAPE FEAR GROUP**  
Wilmington

**CAPITAL GROUP**  
Raleigh

**CENTRAL  
PIEDMONT GROUP**  
Charlotte

**COASTAL GROUP**  
New Bern

**CYPRESS GROUP**  
Greenville

**FOOTHILLS GROUP**  
Winston-Salem

**HEADWATERS GROUP**  
Durham

**HORACE KEPHART  
GROUP**  
Fayetteville

**PIEDMONT PLATEAU  
GROUP**  
Greensboro

**RESEARCH TRIANGLE  
GROUP**  
Chapel Hill

**SANDHILLS GROUP**  
Southern Pines

**SOUTH MOUNTAINS  
GROUP**  
Morganton

**WENOCA GROUP**  
Asheville

The Honorable Charles Hips &  
The Honorable Gerald Anderson, Co-Chairmen  
LRC Study Committee on Nuclear Waste  
General Assembly of North Carolina  
Raleigh, North Carolina 27611

Dear Senator Hips and Representative Anderson,

The Nuclear Waste Policy Act of 1982 requires the U. S. Department of Energy to establish two repositories for the storage/disposal of high-level nuclear waste. The Department of Energy is reviewing 236 crystalline rock bodies, including about 30 in North Carolina, in seventeen eastern states for the eastern repository. The Act provides for state review, comment and veto of proposed repository sites.

The Department of Energy's Office of Civilian Radioactive Waste Management will probably release its Draft Area Recommendation Report for crystalline rock bodies on January 16, 1986. The draft report will probably announce fifteen to twenty crystalline rock bodies that will continue to be considered for a repository.

The Department of Energy has also proposed siting the Monitored Retrievable Storage facility in Tennessee. High-level nuclear waste will be transported through North Carolina to the MRS in Tennessee. Carolina Power & Light Company will probably ship high-level nuclear waste from its Robinson and Brunswick nuclear plants to its Harris nuclear plant, and Duke Power Company may wish to ship high-level nuclear waste from its Oconee nuclear plants to its McGuire and Catawba nuclear plants.

The Department of Energy is the promoter, developer and regulator of the crystalline rock project and the Monitored Retrievable Storage facility. It is difficult to balance promoting and developing with vigorous regulation. The Conservation Council of N. C., N. C. Chapter of the Sierra Club and other conservation organizations believe that North Carolina must advocate and protect its interests.

I am writing on behalf of the Conservation Council of N. C. and N. C. Chapter of the Sierra Club to urge the LRC Study Committee on Nuclear Waste:

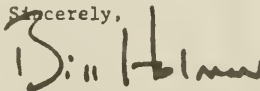
- 1) to recommend legislation to the General Assembly that requires DOE to obtain state permits before exploring or mining crystalline rock in North Carolina,

- 2) to recommend siting legislation to the General Assembly to require thorough local and state review of proposed high-level nuclear waste repositories, to ensure public participation, to provide fair compensation to affected communities, to establish an emergency and contingency fund, to provide for local and state monitoring and inspections and to provide for monitoring of the health of workers and residents,
- 3) to recommend legislation to apply a standard of strict liability to generators, treaters (volume reducers), transporters and storers/disposers of radioactive waste,
- 4) to recommend legislation to the General Assembly to regulate the transportation of radioactive waste in North Carolina and in the Southeast,
- 5) to supplement DOE grant funds by levying a fee on the generators of high-level nuclear waste -- Carolina Power & Light Company and Duke Power Company -- to hire additional staff to review DOE's recommendations, to assist the public and to regulate transportation of radioactive waste,
- 6) to urge the U. S. Congress to repeal or modify the Price-Anderson Act of 1957 which limits the liability of electric utilities and the federal government in nuclear accidents (The Price-Anderson Act expires in 1987 and is now being debated in Congress.), and
- 7) to require electric utilities to set aside adequate funds to pay for decommissioning of nuclear plants.

The Blue Ridge Environmental Defense League, Conservation Council of N. C., N. C. Chapter of the Sierra Club and Western North Carolina Alliance will be writing Governor Jim Martin in January to urge him to take several administrative actions and to consider legislation such as designating a lead state agency, appointing a Governor's Citizen Advisory Council and conducting public meetings.

Thank you for your consideration.

Sincerely,



Bill Holman, Lobbyist  
Conservation Council of N. C.  
Sierra Club, N. C. Chapter

PS. N. C. is poorly prepared for potential selection as a "host state" for low-level radioactive waste by the Southeast Compact Commission. I have enclosed some information about low-level radioactive waste if the Study Committee decides to investigate this issue.

enclosures





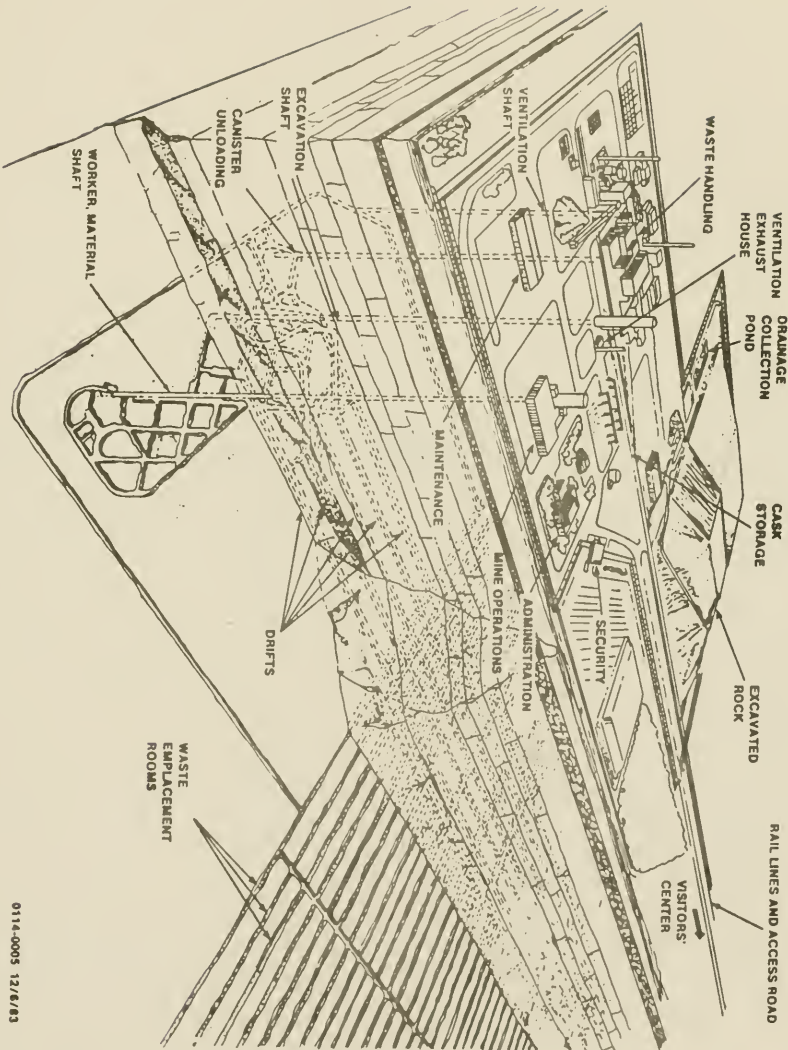


Figure 3-1. Schematic of surface and underground facilities.



## APPENDIX C



Statement of: Ed Israel, Executive Director  
Western North Carolina Tomorrow

Presented to

The High Level Radioactive Waste Disposal Study Committee  
Haywood County Courthouse, Waynesville, N.C.

SOCIO-ECONOMIC IMPACTS OF SITING A HIGH-LEVEL RADIOACTIVE  
REPOSITORY IN WESTERN NORTH CAROLINA

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Chairman Hipps, Chairman Anderson, members of the Committee, On behalf of our board of directors I would like to extend our appreciation for your meeting in Western North Carolina to hear the views and concerns of the people in our region about a Nuclear Waste Repository.

If you are not familiar with our organization; WNCT could best be described as a citizens organization "Working Today for a Better Tomorrow".

Six years ago a concerned group of individuals formed Western North Carolina Tomorrow as a leadership structure to encourage active citizen participation. They believed then, as now, that a concerned citizenry can shape events if properly mobilized, fully informed about regional trends and presented with alternative ways of dealing with identified regional problems. They believed that to stumble aimlessly into the future would not be in the best interests of this generation, or generations yet to come.

## 2.

WNCT's role is an information-education link to provide individuals and groups with information to help them make intelligent, sensitive decisions affecting the future of our seventeen county region. WNCT concentrates its efforts in four main areas: Economic Development, Natural Resource Protection, Education, and Pride in the Region.

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Representative Edward J. Markey, Chairman of the U. S. House of Representatives Sub-Committee on Energy Conservation and Power in a recent statement to the Dept. of Energy said, " We will either have 10,000 years to enjoy the fruits of our labors, or too much time to regret our hasty mistakes. Nothing would be worse than finding that we have been warned, but failed to heed the call."

I cannot, in the time allotted to me, discuss all of the socio-economic areas that would be impacted by a repository located in our region. I will concentrate primarily on the economic impact for it has always been tough to make an adequate income in our western counties and we have consistently lagged behind the rest of the state.

The natural barriers of our mountains, the steep terrain, and transportation difficulties limited for many years our ability to grow and develop, trade our products, recruit industry, and promote tourism.

## 3.

A very real factor, and one directly related to placement of a repository in our region, is the inordinate amount of land in western North Carolina already in federal ownership. Over 1,300,000 acres have been appropriated for the Great Smoky Mountains National Park, The Blue Ridge Parkway, TVA hydroelectric impoundments, and the Pisgah and Nantahala National Forests. Losing this enormous quantity of private land from the tax base and its potential for development and income production has been a severe handicap to the regional economy. In Swain county alone 83% of the county's total land area is in federal ownership.

Displacement of our people to create these federal holdings was a traumatic experience marked by a callous regard for civil rights and a trail of broken promises. Swain county is still seeking fair settlement for a good faith agreement executed 43 years ago with the Department of the Interior. The promise was never kept, and mitigating compensation of more than \$11,000,000. has never been paid.

Entire towns and communities were destroyed to create Fontana lake by T.V.A. The schools, the churches, the homes, the businesses were leveled and the land condemned. Those citizens who tried to resist the federal juggernaut were forced to leave when the gates were closed and the lake waters lapped at their doorsteps.

Today, many of these displaced people and their decedents are still seeking a satisfactory access to their

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family cemeteries isolated on park lands by the lake.

Ask the Eastern Band of the Cherokees about their experiences with removal. Their forebears were forced from their homes and lands at gun point by federal troops and set on a forced march, the infamous "Trail of Tears" to Oklahoma.

Through the years our people have made a real effort to convert the liability of this loss of private lands to an asset, through encouraging tourism in the mountains; and our efforts have been successful. Tourism is our second largest industry and is expected to be number one by 1994.

In 1985, 21,000,000 visitors toured the Blue Ridge Parkway to enjoy the scenic vistas and participate in the Parkway Golden Anniversary. Nearly six million of these visitors accessed the Parkway at Asheville, the highest count recorded at any point.

The Great Smoky Mountains National Park, the "Crown Jewell of the National Park System, set a new record last year with 9,319,000 visitors. The Great Smokys has led all of the national parks in visitations since the park service began keeping records. It is inconceivable that DOE would consider a repository site only six miles from the park boundary.

The Pisgah and Nantahala National Forests were special attractions for 21,000,000 visitors in 1985. These visitors came to fish the crystal streams, hike the trail, hunt the forests and simply enjoy the natural splendor.



## 5.

Let's examine for a moment how our efforts to attract tourists have paid off. Each visitor to Western North Carolina spends an average of \$80.00 per day, and these expenditures totaled more than \$525,000,000. in 1984, an 83% increase over 1979. Each dollar spent generate an additional 75¢ in service related jobs, tourist related industries and taxes. Tourism in Western North Carolina is now a billion-dollar industry and our potential for continued growth is excellent. But, excellent only if we can rid ourselves of the stigma off a nuclear repository.

We cannot develop an advertising campaign encouraging people to visit a nuclear waste repository site. Nor can we promote tourist travel on highways used for nuclear waste transport. We cannot help Asheville maintain its rank as the No.1 place in the nation under 100,000 population to live and work, or Brevard the No. 1 and Hendersonville the No.2 best small cities in which to retire. We cannot convert the liability of a nuclear repository to an asset by any stretch of the imagination nor can we hope to overcome the stigma of a repository being located here.

A study conducted by the Center for Business and Economic research at the University of Tennessee found through a survey of potential tourists, that 47% of those surveyed would not visit within a ten-mile radius of a repository; 35% would not visit within 25 miles; and 24% would not come within 100 miles of a repository site.

6.

Only time will prove these projections accurate or inaccurate but we may safely assume that a repository will have a negative effect on the tourism industry. If we consider only a 10% loss we stand to lose over \$87,000,000. per year in tourism related income. The Asheville Tourism Development Authority, projected the findings of the Tennessee study to the year 2000 and estimates that the loss for Buncombe county, assuming that current growth rates will continue, will total \$281,000,000!

We can assume that placing a nuclear repository in Western North Carolina will have a similar negative impact on second home development in our area. The energy crisis of the early seventies brought a new awareness of our regions moderate climate, and this awareness coupled with the natural beauty of our area has made Western North Carolina attractive to retirees, and families seeking vacation homes. The second home industry is providing an income for developers, builders, and skilled and unskilled workers. Many people are buying land now intending to build homes at a future date. Over 50% of the land parcels in Haywood county are owned by non-residents and in Macon county 67% of the parcels have been purchased by non-residents. Realtors can already provide documented cases of individuals who have changed their minds about locating here, of current residents who are considering selling out, of developers who have chosen to move projects elsewhere, and declines in land values. Tragically, if we are not released from

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the DOE potential site list our second home industry as well as land values and construction trades can be in limbo for 12 years!

Location of a nuclear repository in our region can seriously impact our manufacturing industry and our ability to attract new industry. Our Western North Carolina economy has benefited in recent years from the efforts of area industrial development commissions. Aggressive recruitment efforts emphasized or lower labor costs, cheaper raw materials, attractive tax structures; and the work ethic of our local citizens. As an example; of 46 manufacturers in Henderson county, employing over 7000 workers, 23 of these companies relocated to the county, or began business since 1975. These "new firms" now employ over 50% of the manufacturing work force.

A national survey of top executives by Business Week magazine in February 1984 rated our area and in fact the entire state of North Carolina at the top as a prime relocation area. The survey rated many factors but 63% of the respondents cited quality of life as a major factor in deciding where to relocate their firms.

The University of Tennessee study which measured impacts on tourism also surveyed 130 businessmen. 66% felt repository would harm area business attractiveness. 47% of those surveyed said they would not consider relocating to a county chosen for a repository. This is especially significant when we realize that one third of the workers in the seventeen county region are employed in Buncombe

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and Haywood counties.

Western North Carolina, like the rest of North Carolina was losing jobs before DOE announced the selection of a study site in Buncombe, Haywood and Madison counties. We lost 4000 jobs in the seventeen county region from 1980 to early 1985 through bankruptcy, plant closures, and permanent layoffs. The areas largest employer Buncombe county projects that they will lose 1260 manufacturing jobs and over \$21,000,000. in payroll in the 9 month period ending May 1, 1986. The Asheville Chamber of Commerce estimates that the county will need 1000 new jobs each year for the next 5 years just to keep up with the rate of attrition.

There is no doubt that location of a nuclear repository in our region can and will affect our tourist industry, our property values, or second home industry, our manufacturing enterprises, our construction trades, and the quality of life and general progress of our mountain counties. Yet the Department of Energy rates these factors only as an "adverse condition" that can be mitigated, and not a disqualifying factor. We cannot, and we will not accept this position.

REMARKS OF STEVEN P. YURKOVICH, HEAD & ASSOCIATE PROFESSOR AT WESTERN CAROLINA UNIVERSITY

### INTRODUCTION

Senator Hipps, Representative Anderson, members of the legislature, distinguished guests, ladies and gentlemen. Thank you for the opportunity to address the High Level Radioactive Waste Disposal Study Committee. I have been asked to discuss the suitability of the rock body at the proposed SE-5 site, problems in the construction of the facility and possible environmental degradation as a result of an accidental spill of waste material.

I would like to say from the outset, that the opinions presented this afternoon are solely mine and should not be taken as a statement from Western Carolina University

### GEOLOGIC ASSESSMENT

In reviewing the geologic sections of the Area Recommendation Report (ARR) 1986, the data presented are generally sketchy and subject to a number of interpretations. Information which casts the site in unfavorable terms is overlooked, treated lightly, or dismissed for various reasons. The end results are that more questions are generated than are answered by the text presented.

The Area Recommendation Report states that rocks of the Elk River Complex are well mapped. This is grossly inaccurate for only a small scale generalized geologic map exists for the proposed SE-5 site. Therefore all comments made in the DOE document concerning the SE-5 site suffer because no detailed geologic information is available.

Appropriate rock types for a crystalline repository are defined as "coarse grained igneous rocks and high grade metamorphic rocks that possess a nonschistose (i.e. non layered) texture and the rock mass should be relatively homogeneous." Rocks at the proposed SE-5 site are metamorphosed igneous and sedimentary rocks so in a general sense fit the definition of crystalline. However, according to the above criteria the rocks at the SE-5 site should be disqualified for they are foliated (layered) and are composed of many diverse rock types. The boundaries between adjacent rock units and the foliated rock textures are zones of weakness, along which fractures may form which in turn can then become pathways for fluid movement.

The Area Recommendation Report indicates that the Elk River complex is highly deformed due to mountain building and as a result the proposed site is bounded on two sides by faults and is cut through by many fractures. Two geophysical studies were conducted in the mountains of western North Carolina in the late 1970's. These seismic reflection studies showed the presence of a major fault several kilometers below the surface. Interpretation of the seismic data also suggested that sedimentary rocks lie below the fault surface. Such rocks are unsuitable for a repository and several geologists have further proposed that the sedimentary rocks may be a potential source for hydrocarbons. The DOE, in essence ignored these studies, for they do not mention the significance of this fault, the sedimentary rocks, or the potential energy source to repository siting. In my opinion, based upon both the number of surface and subsurface faults and the diversity of rock types DOE

has not demonstrated the SE-5 site has enough lateral extent or depth for a suitable repository.

In considering the seismicity or earthquake activity of the candidate site, The DOE has discussed only earthquakes that were located at or near the proposed SE-5 site. What effect will earthquakes in adjacent states have on the stability of rocks near Asheville? For example, how did the New Madrid earthquakes of 1811-1812 or the Charleston earthquake of 1886 effect our region? These were several of the largest recorded earthquakes in the United States and were felt over large areas. The DOE study concluded that although we are located in a moderately active earthquake region, the vibrations are sufficiently small and would not cause fracturing of rock material.

The ARR states "there is no apparent relationship between the observed seismicity and known faults within or surrounding the site." Doesn't this suggest that our understanding of the local geology is inadequate? Further the ARR says that "future seismic activity would not produce ground motion in excess of design limits or affect waste contamination or isolation." Can the DOE guarantee, based upon only 200 years of earthquake records, that our region will not have a large earthquake that could damage a repository?

The ARR has not evaluated the groundwater potential of the site, or how the groundwater moves, or where it flows to. Little consideration was given to the vast number of water wells and springs used by residents near the site. Analyses, which could be obtained from existing topographic maps, were not done to establish



if groundwater flow followed regional fracture patterns. No indication was given to show how the surface and ground waters are interconnected. This is most important should a spill of high level nuclear wastes occur and would allow monitoring of the movement of effluent. Finally, no evaluation of the geothermal potential or the hot springs near the site is mentioned.

In addition, the ARR is filled with a number of half truths suggesting that important data were ignored or used to the convenience of their researchers. A few examples will illustrate my point.

1. Anyone who has visited or looked at a topographic map of the proposed site realizes that there are many creeks and streams present. The site has a high drainage density as one would expect in a region with 50 inches of rainfall per year. Yet the DOE document states "the candidate area is characterized by several creeks flowing northeast and southwest (p. 3-588)." Did they even bother to look at existing large scale maps before making that remark? A spill of nuclear wastes into these streams could contaminate either the French Broad or the Pigeon River drainage basins (and points downstream). No mention is made of the fact that the Pigeon River flows to within one mile of the GSMNP. What long-term damage could a spill have on the ecology of the park?
2. No data is given to support the statement: "There is a very low flooding potential at the SE-5 site (p. 3-590)." In fact, the DOE did not analyse historic precipitation



or flood records or scan local newspapers to determine if the site does have low flooding potential. One needs only to look back to 1982 when over seven inches of rain fell in a three hour period in the Newfound Creek area causing wide spread flooding.

3. Another sentence reads: "No such hydrocarbon resources have been proven to date at the candidate site (p.3-473)." Such a remark implies that oil and gas have not been found. In actuality no wells have been drilled or geophysical studies performed to establish if hydrocarbons are present below the Blue Ridge.

Such misleading statements, using only selected data, lead a scientist to suspect the validity of all the DOE's evaluations and comments. The limited amount of geologic and hydrologic data available for the site could have been utilized more judiciously and fairly: perhaps with the outcome of moving this site to a lower position on the acceptable list.

#### CONSTRUCTION ISSUES

Other items, many of which are related to construction or siting of the facility are not discussed in the ARR. A few questions which I believe are relevant to a better understanding of this project follow:

1. Why has the SE-5 site been selected when it sits within eight miles of three national preserves (Great Smoky Mountain National Park, Blue Ridge Parkway, and Shining

Rock Wilderness)? Who established that a six mile buffer zone between a repository and a national park is adequate?

2. What adverse environmental problems will occur at the site itself? How will the excavated rock be stored? Will sedimentation ponds be necessary to protect adjacent streams from siltation? How close will the facility be located to streams? If a spill occurs during handling at the site will the wastes be mobile enough to enter the waterways.
3. Blasting will be needed to build shafts and tunnels. Will the blasting produce new fractures or open existing fractures which occur throughout the rock mass? What noise and dust pollution will result from the construction?
4. Granitic rocks usually contain small amounts of uranium minerals. By bringing the excavated rock to the surface and exposing additional uranium minerals will the radon gas concentration (produced by radioactive decay of uranium) at the site increase? Radon gas is a known carcinogenic agent.
5. How will the DOE insure that the underground facility is impermeable to ground water? How will DOE monitor the ground water around the facility to assure people that the wastes are not leaking into the environment.

## ACCIDENTAL SPILLS OF WASTE DURING TRANSPORT

If the SE-5 site is ultimately selected the nuclear wastes could be transported through North Carolina on two separate occasions. The first is the movement of high level nuclear wastes over our transportation networks to the temporary storage facility (MRS). The second is the shipment of that repackaged waste from the MRS to the repository site (probably by dedicated railroad cars).

It is my belief that the greatest risk in this program is the potential for an accidental spill occurring during transportation or during the handling of the high level wastes at the processing facilities. Such spills have the potential for long term adverse effects both on public health and environmental quality. I would ask that your study committee be aware of these problems.

1. The DOE/DOT should establish whether I-40 through the Pigeon River Gorge is a safe highway transportation route for high level wastes. Will the transport containers be designed to withstand the impact of a rock slide? If the container were to rupture in such an accident, could radioactive material enter the Pigeon River?
2. The DOE states that the wastes will be transported in solid form. Is the radioactive material or the matrix in which it will be enclosed soluble in water? If the wastes enter surface waters how far will it be dispersed downstream from an accident?

3. The decay of uranium produces radon gas. Should a container rupture what will happen to the radon level at the accident site and downwind from it?

### CONCLUSIONS

In summary, the proposed high level nuclear waste disposal site west of Asheville has been selected even though detailed geologic information is not readily available. Because of the lack of detailed data evaluation of the criteria for site selection are subject to many interpretations. However, I believe that the geology is in our favor and will ultimately eliminate the site from consideration.

I would like to digress for a moment and ask a more fundamental question. Who has established that high level nuclear waste should be buried in deep geological formations? It appears that the technology for packaging, transporting, burial, and monitoring of the wastes does not yet exist. Is there not a better way to store this material than below ground where it cannot be monitored effectively?

I urge your committee to take an active and aggressive role in this battle with the DOE. The residents of North Carolina need strong leadership and direction in establishing a unified approach to this issue. Thank you for the opportunity to speak to your committee.

## The Social Impact of a Nuclear Waste Repository

By Gordon B. McKinney

History Department, Western Carolina University

The most accurate statement we can make about the impact of a nuclear repository is that that we have no final answers.(1) Since this process has never been completed anywhere in the United States, researchers are forced to compare this proposed action with dissimilar nuclear construction projects in other parts of the country. That fact means that we cannot give definitive information on the precise impact of the repository on the three counties in Western North Carolina. While all conclusions must be tentative under these conditions, there appear to be several broad outlines of developments which we can predict with some confidence.

First, it seems quite obvious that there will be a profound social impact on Buncombe, Haywood, and Madison Counties long before any final decision on the repository is made. The absence of any solid data and lack of local input into the selection process has created a strong feeling of uncertainty. This condition has already led to a serious weakening of the social fabric as a near panic caused by fear has swept through the communities designated by the Department of Energy as the primary site area. In the Sandy Mush region of Buncombe County, tax evaluators doing a survey for neighboring Madison County were suspected of working for the Federal government. Their presence caused great alarm that could not be calmed by prominent anti-dump spokesmen from their own community.(2) In the Beaverdam section of Haywood County, a prospective second home buyer from

Louisiana found himself staring into a shotgun and ordered off the property of a resident who feared the visitor was a DOE agent.(3)

This grave concern could lead to the total disruption of these communities if creative leadership is not provided. If this area remains on the DOE list until the final eastern site is selected, the citizens face at least 12 years of uncertainty about their future. During that time, they will have great difficulty using their property for any financial purposes. Parents will not know whether children will be able to continue the tradition of farming-a tract of land owned by several generations of the same family. Church congregations and local businesses will not know whether they will have to relocate. The anxieties caused by these unknown consequences will place considerable strain on the family and social life of these communities and could easily lead to internal conflict and external violence.(4)

The end of the 12 year period in 1998 could provide even greater cause for concern. If the Elk River site is selected, the Federal government will be hiring at least 1000 skilled miners to begin work by the year 2000. We can expect hundreds, and perhaps thousands, of unemployed coal miners from neighboring states to move here with their families. This would place a massive burden on the social service agencies in these three western counties and could easily lead to a rapid increase in the crime rate.(5) When construction begins, the three counties will experience many of the problems of a western "boomtown." (6) Then six years later, the construction workers will be replaced by a smaller number of technical workers. This development will once again force dramatic change on the region.

Much of the trauma facing the local population can be mitigated by carefully planning by local authorities. The county and municipal governments will have to process increasing numbers of highly technical Federal forms. That fact will force these governments to become more professional and to resort to the kind of long-range planning that has been overlooked in the past. If these officials do not do this, they will probably fail to take advantage of the financial relief funds available under the Nuclear Waste Policy Act of 1982.(7) Special training involving nuclear waste will have to be required of police, fire, health, and hospital personnel. Only when local residents sense that local officials are capable of reacting professionally to a crisis will the level of anxiety in these communities begin to subside.

Legally, the local government has only a minor role to play in this process. The residents of the three counties are represented by the State of North Carolina in all dealings with the Federal government. Quite frankly, the residents of this region are not convinced that the State is working in their best interests. Ellen Hearne of Sandy Mush captured this feeling when she stated: "Some people feel that the state may be the pawn of DOE, either knowingly or unknowingly."(8) Her suspicion about the willingness of the State to protect local interests seems warranted by the State's site selection budget. The State government received \$240,000 from the Federal government in 1985 to defray costs of investigating the two North Carolina sites. These funds were used for technical review, public participation, travel, and consultation.(9) The same budget will be



used for 1985 with no plans for any of the money to be given to local governments or residents of the area who have suffered financial losses.

The need that local people feel for greater security and to protect their financial interests can only be supplied by having direct access to the site selection process. A 1983 report from the National Academy of Sciences to DOE recognized that local groups would need to have this direct and formally recognized input. 'NAS suggested the creation of organizations that would represent local interests and protect the individuals directly involved.(10) Attached to this report is an outline of a Tri-County Nuclear Waste Authority that could act as that local representative. Without this Authority, or some similar structure, the citizens of Madison, Haywood, and Buncombe Counties will become increasingly alienated from the State and Federal governments. This alienation combined with the uncertainty already being experienced will only lead to further community conflict and the increased likelihood of violence directed toward outsiders.

One final point, the most significant social impact will take place if, and when, the site is located in Western North Carolina. At that time, the residents of the site will be forced to sell their land to the Federal government and leave their ancestral homes forever. Despite every effort on their part, a most important segment of their life will be utterly destroyed. The churches, neighbors, and all other community groups will be scattered and shattered. Because of security precautions necessitated by the storage of military wastes, residents will no longer have access to family cemeteries and other



physical manifestations of their community life. (11) While they can--and will--be adequately compensated for any financial hardship that they suffer, there is no way for any government to make up for the loss of their family heritage or the loss of their community. Their sense of deprivation will only be compounded if they feel that they have been excluded from the decision-making procedures used by the State and Federal governments.

Thus, the essential outlines of the situation are clear. The people of Madison, Haywood, and Buncombe Counties are already experiencing adverse effects from the site selection process. These negative results will continue and grow worse throughout this period unless local governments and service organizations prepare themselves and inspire confidence among their constituents. Even these efforts will be useless if the local population perceives that the State and Federal governments are excluding them from having input about their own future. The most obvious way to restore confidence in the decision-making process is to provide a formally recognized local organization that can represent local governments and individuals. Finally, we must acknowledge that hundreds of families and several communities face the destruction of their way of life if the Elk River site is selected. We must insure that these victims of our national policies do not suffer financially and are treated as humanely as possible in the relocation process. Only with vastly improved planning and local participation can the worst effects of the social crisis be avoided or reduced.

- (1) Social and Economic Aspects of Radioactive Waste Disposal: Consideration for Institutional Management (Washington: National Academy Press, 1984), pages 38-42.
- (2) Report, March 6, 1986, Advisory Committee, North Carolina Department of Natural Resources and Community Development, Asheville, N. C.
- (3) Waynesville Mountaineer, March 10, 1986, pages 1, 7.
- (4) Roy T. Bowles, Social Impact Assessment in Small Communities (Toronto: Butterworth & Co., Ltd., 1981), pages 101-105.
- (5) W. L. Freudenberg, et al, "Subjective Responses to an Energy Boomtown Situation," (Chicago: American Sociological Association, 1977).
- (6) John W. Gartrell, et al, "Boom Towns: The Social Consequences of Rapid Growth," in Don D. Detomasi and John W. Gartrell, Resource Communities: A Decade of Disruption (Boulder: Westview Press, 1984), pages 95-100.
- (7) Federal Register, Vol. 49, No. 236 (December 6, 1984), Pages 47747, 47765.
- (8) Waynesville Mountaineer, March 21, 1986, page 1.
- (9) Interview, Evan Brunson, March 25, 1986.
- (10) Social and Economic Aspects, pages 13, 101.
- (11) The impact of the removal of Cataloochee residents from the National Park in Haywood County is documented in: Robert H. Woody, "Cataloochee Homecoming," South Atlantic Quarterly (1950).

## H A L T

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HALT is an organization with a broad-based community involvement which is opposed to the selection of our area as a "Potentially Acceptable Site" for a second high-level Nuclear Waste Repository. Our "members" represent a cross-section of civic clubs, organizations, churches, businesses, and labor organizations.

We are opposed to the selection of our area as a "potentially acceptable site" because we think our area is inappropriate and unsuited for storage of nuclear waste. We also believe that the DOE, in developing their siting guidelines, has severely misinterpreted their congressional mandate under the Nuclear Waste Policy Act of 1982. DOE has failed to consider the State of North Carolina's input, ignoring key pieces of data. They failed to identify certain key factors--"population densities, centers, and distribution" and "socioeconomic characteristics" among them--which, by their own guidelines, should have been considered during this first stage of their process and disqualified our area. Their public hearing was a non-event as the DOE spokesman refused to answer questions and gave obscure non-answers when they would reply. DOE has refused to consider extending the comment period deadline while failing to meet previous deadlines themselves and publically admitting that they will fail to meet the July, 1986 deadline for completing the Final Area Recommendation Report.

The methodology including the scaling of screening variables does not meet acceptable criteria for scientific evaluation of the facts. The sensitivity of their methodology is too poor for a logical analysis. The "facts" DOE compiled are inaccurate and incomplete. Failure to note flooding, hot springs, the Canton watershed, and even the entire town of Clyde are examples of the poor data collection DOE has done. Local geologists even doubt that the Elk River Massive is a rock body at all.

The background of this project is important to consider: 30 years of mismanagement of a growing crisis--the steady accumulation of toxic, deadly, high-level nuclear waste. The public is only too aware of past mistakes leading ground water, soil, and air contamination. We are only too aware that there is no safe method of transporting nuclear waste. In fact, there is no developed technology for a deep, mined underground repository in crystalline rock. The public maintains a well-deserved scepticism of the DOE and the NRC and their forerunner organizations.

Site selection by the DOE has thrown our communities into chaos. The immediate concern of our citizens include the following:

1. Real estate assets in the site zone and surrounding areas are frozen. Interest in purchasing has dropped. Appointments to show property have been cancelled. Sales have been lost.
2. Property values have decreased.
3. Planning for the future for many households has been derailed.
4. Throughout the area there is concern for future development in the tourism, real estate, and building industries.

These concerns will continue through the next or "Area Phase" of the process. The resulting economic uncertainty will last until at least 1992.

There are many concerns the citizens have concerning the area phase. These include: Rights of the property owners to refuse DOE access. Many of us are concerned about the maintenance of law and order should certain segments of our populace use force to try to keep DOE officials and their subcontractors out of our area. We are concerned lest the State of North Carolina bargain away our rights in an ill-conceived "consultation and cooperation" agreement. We are concerned that environmental disruptions could result from "exploratory drilling, sampling, well construction, core recovery, hydrologic testing, etc." Many of the techniques DOE or their subcontractors use could potentially and irreversibly harm our area. The State must develop strict criteria for licensing DOE or their subcontractors in these various endeavors to protect the rights of the people during the "area phase."

Should we be so unfortunate as to be chosen for "site characterization," a process which could begin in 1992, and continue for 4-6 years, our concerns are very much the same as if we are finally chosen for construction of the actual repository. Site characterization will be a potentially devastating process involving thousands of workers, massive shaft work. Strict licensing will again be needed to protect the rights of the people. The potential for disruption of the social, moral, and economic values of the selected community is tremendous. A whole community could be destroyed and with it the roots of countless families: their homes, their churches, and their cemeteries if site characterization or construction of an actual repository occurs.

Using criteria designed by the DOE to locate a repository in an area isolated from people and places people go, our area is clearly disqualified. The Great Smokies National Park is 6 miles from the proposed site. The Blue Ridge Parkway and the Appalachian Trail are 8 miles away. These national treasures account for tens

of millions of visitors a year and are the backbone of a tourist industry which is fast becoming our most important source of economic support. The site is located adjacent to the Greater Asheville Metropolitan Area which, with Haywood and Henderson counties, has a population of approximately 300,000, swelling by 30-50% seasonally. It is inappropriate for DOE to spend millions during the "area phase" to discover ours is an inappropriate site. It would appear that the Graham-Rudman amendment should address this wasteful process. We urge each of you to become involved in our fight. We are not opposed to nuclear power--we do not have a hidden agenda as regards nuclear arms or any other issue. We have been hurt by being selected a potential site. We are not an acceptable site. We want off the list now and forever. Furthermore, I encourage you to study legislative efforts particularly in Mississippi and Texas which have limited DOE and made it more accountable.

A State Authority, created by the Legislature, working in cooperation with the Governor's Office, and involving many departments and state offices to address all the issues of the nuclear waste problem and developing a statewide plan is essential. Strategies and responses to the issues of the Crystalline Repository are important but it is also essential that the State devise a system and a plan to deal with all aspects of nuclear waste, especially transportation of high and low level wastes and low level waste disposal.



## APPENDIX D





SUMMARY OF NORTH CAROLINA COMMENTS ON DOE DRAFT AREA  
RECOMMENDATION REPORT, DOE/CH-15(1)

The State of North Carolina has reviewed the U.S. Department of Energy's Draft Area Recommendation Report (Draft-ARR), DOE/CH-15(1) (January 1986). This document constitutes the response of the State of North Carolina to the Draft Area Recommendation Report (DOE/CH-15(1)); however, the State reserves the right to submit additional comments on the Draft-ARR as it deems appropriate. North Carolina has found significant inadequacies in three areas of the Draft-ARR: geologic characterizations, environmental characterizations, and methodology.

The State of North Carolina has several major criticisms of DOE's description and evaluation of geologic characteristics of the Rolesville Pluton and Elk River Complex in North Carolina. These criticisms are as follows:

Rolesville site

(1) The geologic map in the report is inconsistent and inaccurate.

(a) Seventeen geologically young faults in and near the Rolesville area are omitted from the map and report.

(b) The location of the Nutbush Creek fault zone on the map is placed farther west than more detailed mapping positions it, and the fault zone shown is more than 10 times wider on the map than its stated width in the text.

(c) Diabase dikes were shown on the map only in Wake County, while known dikes in other counties were omitted.

(2) Scientific descriptions of the 17 omitted geologically young faults in the region indicate that some may be Quaternary in age, thus contradicting statements in the text.

(3) Core logs from four boreholes in the Rolesville Pluton, drilled by the Virginia Polytechnic Institute and State University for the DOE, are the main source of relatively deep subsurface information in the area. They indicate that rocks of the pluton are extensively altered at depth, and that there has been significant passage of fluids through the rocks; this information has been ignored by DOE.

(4) Groundwater in the Rolesville area is mostly obtained from porous, weathered material below the soil zones (saprolite) and from fractures in the bedrock. The water bearing fractures extend to an unknown depth and are interconnected. The groundwater is extensively used at present and use is certain to increase in the area. Escape of radioactive material could contaminate this major source of groundwater, because the interconnecting fractures may extend to the depth of a repository.

#### Elk River complex

(1) The warm springs at Hot Springs, North Carolina, 17 km (11 mi) north of the site, indicate that groundwater is currently circulating to a depth of more than 1520 m (5000 ft), which is deeper than the expected lower depth of a repository; this critical consideration for repository siting was omitted by DOE.

(2) Barite deposits and other evidence of mineralization along fault zones in the area indicate that the fault zones have been major paths of flow of heated water in the past.

(3) The geologic cross-section does not show a major thrust fault that extends beneath the entire Elk River area at a depth of less than 3000 m (9850 ft), according to recent geologic interpretations. This is a serious omission by DOE.

(4) Lower Paleozoic sedimentary rocks occur in thrust sheets 3 to 5.5 km (1.9 to 3.4 mi) below the Elk River area; these rocks locally contain crude oil and natural gas to the northwest of the site. It is possible that rocks beneath the Elk River area contain exploitable natural gas accumulations (oil pools are less likely); the area will likely be drilled in the future in search of these resources.

(5) Sedimentary rocks in the thrust sheets below the Elk River area include thick sections of dolomite and limestone, which are relatively easily dissolved in groundwater. Caves and other evidence of solution are abundant where these rocks occur in outcrops northwest of the site, and may be present beneath the site.

(6) The Elk River site lies within the area covered by the Southern Appalachian Regional Seismic Network of the Tennessee Earthquake Information Center, but this source of high-quality earthquake data was not utilized. This inadequacy is of special concern because the Elk River site is within one of the most seismically active regions in the eastern U.S.

(7) The grade (level of intensity) of metamorphism of a candidate rock body is required by definition to be at least upper amphibolite facies. At least part of the body is at lower amphibolite grade and does not meet the requirement.

(8) Rocks of the Elk River area are extremely heterogeneous, with a variety of major rock types and many shear zones, dikes, and sills; it is difficult to predict the pattern and rate of groundwater flow in such a complicated and irregular distribution of rock types.

(9) The name "Elk River complex" is used only in this report and the previous DOE reports in this project; it is not used anywhere else in geological publications. Usage of

"Elk River complex" indicates it was derived from "Elk River Massif" in published geological reports. A massif is a structural or tectonic body, not a rock body in the sense intended in this project. Thus it is difficult or impossible to trace the sources of information used by the DOE in its work; much of which might not be directly applicable to the Elk River site. The name changes should be explained and any new terms clearly defined.

(10) Grade of metamorphism is an important criterion in this project. The stated grade of metamorphism in the Elk River site is misleading and perhaps inaccurate, because the cited reference does not give the grade of metamorphism in the proposed Elk River site.

(11) Geology of the Elk River site is poorly known, in spite of statements to the contrary in the Draft-ARR.

The Great Smoky Mountains National Park, as a Biosphere Reserve, constitutes an internationally recognized region of natural and cultural significance. The Biosphere Reserve Program, originally established under UNESCO and now under the auspices of the U.S. State Department, recognized the Great Smoky Mountains National Park in 1976 as having unique and valuable cultural and natural resources. In addition, the entire Elk River site is included in a proposed Southern Appalachian Biosphere Reserve. The Great Smoky Mountains National Park is also a World Heritage Site, and therefore all development adjacent to the Park must consider actual and potential impacts on its natural and cultural resources. The identification by DOE of the Elk River area as a potential repository site is clearly inappropriate for a region of this degree of international significance.

North Carolina believes that DOE has erred in neglecting the presence of two population centers within the Rolesville PCA. These two population centers, Wendell and Zebulon in Wake County, have population densities well over 1000 persons per square mile, according to calculations based on the 1980 U.S. census and acreage within the 1980 town limits. Although DOE has used Minor Civil Divisions (MCD's) as its base unit of population in the first stages in site selection, the presence of these two highly populated areas within the boundaries of the PCA should have been noted in Step 4. These two areas, and the grid cells adjacent to them, are entitled under the 1982 Nuclear Waste Policy Act to immediate disqualification from further consideration for possible repository siting. The resulting decrease in the size of the Rolesville grid-cell base, which would allow essentially no flexibility in the location of a repository, should in itself be sufficient to eliminate the Rolesville rock body from the siting process.

The stated purpose of "Step 4" is "to help ensure that there is reasonable expectation, within the constraints of a regional study, that each preliminary candidate area warrants further examination in the area phase." Rapid population growth in the area of the Rolesville PCA should have been considered by DOE in Step 4, because continued growth will certainly disqualify this area from the siting process. DOE has been negligent in ignoring this highly significant characteristic of the Rolesville region.

DOE's methodology in selecting 12 sites as proposed potentially acceptable sites out of an original 235 areas is highly questionable. Most of the siting criteria used by DOE are geologic. Population concerns are contained in only two of the sixteen variables used by DOE in its selection process. DOE thus "stacked the deck" in favor of geologic variables and against population considerations. Although states' weighting subgroups assigned heavy weights to the two population-based variables, CRP subgroups assigned these variables very small relative weights. Since there were a greater number of CRP subgroups, population variables again were discounted in favor of geologic variables.

The execution of "Step 4" (defined by DOE in the Draft-ARR, with no opportunity for state input) did not fulfill the requirements of the process of "Selection of Candidate Areas" described in the Screening Methodology Document (SMD). DOE did not fully review and apply the appropriate Implementation Guidelines (subpart B of the DOE Siting Guidelines). The characteristics examined in Step 4 were arbitrarily chosen and incompletely described. DOE did not document evidence used in evaluating potential sites but not included in the final Regional Characterization Reports, as required in the SMD (page 55).

The process by which DOE moved two preliminary candidate areas from the less-favorable Phase A "7 out of 9" category to become included in its final list of proposed potentially acceptable sites is unacceptable. DOE relied upon criteria that bear little relation to the ultimate safety and suitability of the proposed repository. These criteria do not form a sound basis for the selection of a potential repository site; a site that was found to be inferior using the scaled variables should not have been selected on the basis of these characteristics.

DOE did not account for the effects of multiple population centers or of cumulative population counts on the suitability of a proposed repository site. The single linear scaled variable used by DOE to evaluate the impact of the repository on populated areas, "Proximity to Highly Populated Areas," does not provide a sufficient measure of regional or local population characteristics. This problem is particularly acute in regions exhibiting rapid population increases in many scattered population centers.

Other environmental concerns that are inadequately discussed or evaluated in the Draft-ARR are as follows:

(1) The Elk River area is subject to severe flooding, indicated historically by devastating floods in 1977 and 1982.

(2) The social and economic importance of the Great Smoky Mountains National Park and the Blue Ridge Parkway was vastly underestimated by DOE, as was the likely extent of the negative effects that could be generated by repository siting near these protected areas of national and international significance.

(3) Two State-protected lands within the Rolesville proposed potentially acceptable site were neglected by DOE. Although these lands (Mitchell's Mill Pond State Park and Natural Heritage Area, and Robertson's Pond Natural Heritage Area) are smaller than 320 acres, they should have been disqualified in Step 4, and proximity to each of these protected lands measured as a screening variable having a cumulative effect.

(4) Many sites of historic-preservation value are located within or in the vicinity of the proposed sites; these would suffer adverse consequences if a repository were to be constructed in either place.

Geologic considerations alone should be sufficient to disqualify both the Elk River and Rolesville sites from the repository siting process. Serious socioeconomic concerns also exist for both the Elk River and the Rolesville sites: a repository at the Elk River site would be extremely detrimental to internationally significant protected lands, and a repository at the Rolesville site would present an unacceptable risk to populations in one of the fastest-growing areas in the Southeast. These and other significant characteristics of the Rolesville and Elk River sites should disqualify both areas in North Carolina as potentially acceptable sites for a high-level nuclear waste repository.



## APPENDIX E





## HIGH-LEVEL WASTE LEGISLATION IN OTHER STATES

## New Hampshire

Sec. 125:77-b of New Hampshire law provides that no person shall receive, store or dispose of radioactive waste in the state or within the coastal jurisdiction of the state. Nothing in this subdivision of the law shall be construed to prohibit the on-site storage of spent nuclear fuel rods nor in any way to abrogate or amend the agreement entered into between the state and the United States Atomic Energy Commission pursuant to section 274 of the Atomic Energy Act of 1954 as amended; provided, however, under no circumstances shall spent nuclear fuel rods from any other plant or storage facility be received for on-site storage. New Hampshire currently has a task force to deal with low-level waste only.

## Wisconsin

The Radioactive Waste Review Board was created by the Wisconsin Legislature in 1981 to act as an advocate on behalf of the citizens before the federal government on the disposal of radioactive waste. The Board consists of a member of the Senate and a member of the Assembly, a public member selected by the Senate and one public member selected by the Assembly, 4 members selected by the Governor, the chairperson of the Radioactive Waste Review Policy Council, and the chairperson of the Radioactive Waste Review Technical Council. The Board has two ancillary bodies attached to it: (1) the Radioactive Waste Review Policy Council and (2) the Radioactive Waste Review Technical Council. The Policy Council's duty is to receive input from the public, local government units and American Indian tribal units. The Technical Council consists of state agency heads and other members with technical expertise. Each council is composed of 11 members appointed by the Board.

The Radioactive Waste Review Board is the initial agency to be contacted by the federal government. The Board will receive all information from the federal government and disseminate this material. The Board will also promote and coordinate educational programs which provide information on high-level radioactive waste; review any application to the federal department of energy or other federal agency by a state agency, local unit of government or regional planning commission for funds for any program related to the long-term disposal of high-level radioactive waste or transuranic waste; monitor federal activity in Congress; request the attorney general to intervene if appropriate; and negotiate written agreements and modifications to these agreements with DOE and other federal agencies. The Board is to consult with the two councils during the negotiation or modification of any agreement. The two councils shall prepare written comments on any agreement or draft agreement being negotiated by the Board if requested to do so by the Board. The

Board shall conduct more than one public hearing on any proposed agreement or modification to an agreement. An agreement or modification must be approved by the majority of members of the full Board and then must be approved by the Legislature and governor. An agreement negotiated by the Board with DOE shall include a list of reasons for which the Board may object to the selection of a site within this State for the long-term disposal of waste.

If DOE selects a site in the State for a repository, the Board shall review the adequacy of the selected site. The review shall include a full scientific review of the adequacy of the selected site and of the site plan. The Board shall solicit written comments on the selected site and the site plan from the radioactive waste technical council. The Board shall utilize recognized experts in conducting its scientific review. Funding of the Board shall be from moneys received from DOE and other federal agencies and from gifts and grants received from other persons.

The Board has directed state agencies to cooperate with DOE only to the extent required by the State's Open Record Law. The Board has also requested the State Attorney General to file suit challenging the repository site selection guidelines adopted by DOE.

In a 1983 referendum, 89% of the Wisconsin voters voted "no" to the question of whether they wanted a disposal site in Wisconsin and 11% voted "yes".

#### Maine

The Radioactive Waste Commission is to advise the Governor and the Legislature on matters relating to radioactive waste management. This Commission is composed of 13 members: the Commissioner of Environmental Protection, the Commissioner of Human Resources and the State Geologist or their designees. The President of the Senate shall appoint three senators, one person from an organization that holds a license for the use of radioactive material and one person from the general public. The Speaker of the House shall appoint three representatives, one person that holds a license for the use of radioactive material and one person from the general public.

The duties of the Commission are to study the management, transportation, storage and disposal of radioactive waste, including low-level and high-level radioactive waste generated in or near this State; evaluate methods and criteria for siting and constructing disposal or storage facilities; advise the Governor and Legislature on the findings and recommendations of the Commission; assist the Governor in regional efforts to manage radioactive waste; and provide opportunities for public input,

disseminate information to the general public and promote public understanding concerning radioactive waste issues.

"Area studies" for high-level radioactive waste, means the study of areas with potentially acceptable sites using available geophysical, geologic, geochemical, hydrologic and other information; and additional geological reconnaissance and field work, including geophysical testing, preliminary boring and excavation as necessary to assess whether site characterization should be undertaken for any sites within the area. Area studies also include socioeconomic and environmental studies and preparation of any environmental assessment relating to the suitability of the site for nomination for site characterization.

Prior to initiation of area studies the Commission must submit a plan for those studies to the Legislature for approval. The plan shall include procedures for the establishment of a state review group to review the conduct of the area studies. This review group is to include representatives of the scientific community, the Legislature and the general public.

No person may explore geological formation within the State for the purpose of siting a high-level radioactive waste repository without a written permit from the State Geologist.

No high-level radioactive waste disposal or storage facility covered by this section of Maine law may be constructed or operated in the State, unless the Legislature has expressly approved the construction or operation of that facility.

#### Minnesota

The Governor's Nuclear Waste Council was created in 1984 and consists of at least nine members: the commissioners of health, transportation, and natural resources, and the director of the pollution control agency; four citizen members appointed by the governor; and the director of the Minnesota geological survey. One additional citizen from each potentially impacted area may be appointed by the governor if potentially impacted areas are designated in Minnesota. One Indian who is an enrolled member of a federally recognized Minnesota Indian tribe or band may also be appointed by the governor. At least two members of the Council must have expertise in the earth sciences. The chairperson is to be appointed by the governor from the members of the Council.

The Council's duty is to monitor the federal high-level radioactive waste disposal program under the Act and advise the governor and the legislature on all policy issues relating to the program. Staff support for council activities must be provided by the state planning agency.

Upon notice from DOE that Minnesota contains a potentially impacted area, the chairperson shall negotiate a consultation and

cooperation (c & c) agreement with the federal government. Studies or tests of the site may not be conducted before the execution of a c & c agreement. A permit is required for geologic and hydrologic drilling. The Minnesota Environmental Quality Board is to develop rules which are to include: compliance with state drilling activities and restoration regulations, proof that access to the test site has been obtained by a negotiated agreement or other legal process, payment of a fee to cover the costs of processing and monitoring drilling activities, unrestricted access by state officials to the drilling sites to make inspections and take samples, and submission of core samples to state officials.

The Minnesota Environmental Quality Board is to conduct public information meetings within an area designated in a draft area recommendation report, final area recommendation report, draft area characterization plan, or final area characterization plan. Information meetings shall be held within 30 days after the Board receives each of the reports. The Board shall notify the public of information meetings and the availability of the area recommendation reports and the area characterization plans. Copies of the reports shall be made available for public review and distribution at the board office, the Minnesota geological survey office, regional development commission offices in regions that include a part of the potentially impacted areas, county courthouses in counties that include a part of a potentially impacted area, and other appropriate places determined by the Board to provide public accessibility.

In 1985 the Minnesota Legislature passed a resolution memorializing their opposition to a high-level waste repository.

#### Virginia

The Executive Director of the Virginia Solid Waste Commission is to serve as legislative liaison with DOE regarding the high-level waste repository. During the 1986 session the General Assembly passed a resolution memorializing their opposition to the selection of areas within Virginia for consideration in the siting of a high-level radioactive waste repository. The Virginia statutes require a person transporting hazardous materials through the state to comply with federal regulations.

## APPENDIX F



## GENERAL ASSEMBLY OF NORTH CAROLINA

EXTRA SESSION 1986

## RATIFIED BILL

CHAPTER 1  
HOUSE BILL 3

AN ACT TO SUBMIT TO THE VOTERS OF NORTH CAROLINA WHETHER THERE SHOULD BE LOCATED WITHIN THE STATE OF NORTH CAROLINA A HIGH-LEVEL RADIOACTIVE WASTE REPOSITORY SITE..

Whereas, the United States Department of Energy has recently designated two areas in North Carolina as potential high-level radioactive waste repository sites; and

Whereas, it is necessary to ascertain the will of the people of North Carolina whether they want the federal government to locate a high-level radioactive waste repository site in North Carolina; and

Whereas, it is expedient that action be taken in a timely manner so as to be available for consideration by the Department of Energy as part of North Carolina's response to the Draft Report prior to the issuance of its Final Area Recommendation Report in July, 1986; and

Whereas, a referendum will provide a way to educate the citizenry as to the magnitude of this repository; Now, therefore, The General Assembly of North Carolina enacts:

Section 1. There shall be submitted to the qualified voters of the State of North Carolina at a statewide election to be held May 6, 1986, a referendum to determine the will of the people of North Carolina whether the United States Department of Energy should locate a high-level radioactive waste repository site in North Carolina. The referendum shall be held in accordance with the provisions of Chapter 163 of the General Statutes, and the form of the ballot shall be:

"□ FOR the location within the State of North Carolina of a high-level radioactive waste and spent nuclear fuel disposal site.

□ AGAINST the location within the State of North Carolina of a high-level radioactive waste and spent nuclear fuel disposal site."

Sec. 2. The result of the referendum shall be canvassed and certified by the State Board of Elections to the Secretary of State of North Carolina in the manner and at the time provided by Chapter 163 of the General Statutes. The Secretary of State shall certify the result of the referendum to the President of the United States, to each member of the United States Congress, and to the Secretary of the United States Department of Energy.

Sec. 3. This act is effective upon ratification.  
In the General Assembly read three times and ratified,  
this the 18th day of February, 1986.

ROBERT B. JORDAN III

Robert B. Jordan III  
President of the Senate

LISTON B. RAMSEY

Liston B. Ramsey  
Speaker of the House of Representatives



STATE OF NORTH CAROLINA  
LEGISLATIVE RESEARCH COMMISSION  
STATE LEGISLATIVE BUILDING  
RALEIGH 27611



April 17, 1986

The Honorable James G. Martin  
Governor of North Carolina  
The Capitol  
Raleigh, North Carolina

Dear Governor Martin:

At the April 16th meeting of the High-Level Radioactive Waste Disposal Study Committee there were many concerns expressed regarding the lack of statewide awareness of the nuclear waste referendum which will be on the May 6th ballot. As a result of these concerns, the following motion was approved by the Committee:

"This Committee requests the Governor, the Lt. Governor, and the Speaker of the House to hold a joint press conference to explain the wording of the nuclear waste referendum as it will appear on the May 6th ballot in an effort to eliminate any confusion and to encourage statewide coverage by the media, particularly in non-affected areas."

The Committee feels that this joint endeavor is needed to educate the citizens of this State and we look forward to working with you.

Sincerely,

Charles W. Hipps, Cochairman  
High-Level Radioactive Waste  
Disposal Study Committee

CWH:lt



## APPENDIX G



*Dagpu Brown*

NORTH CAROLINA RADIATION PROTECTION COMMISSION  
AND  
DEPARTMENT OF HUMAN RESOURCES

ROLES RELATED TO HIGH-LEVEL RADIOACTIVE WASTE TRANSPORTATION

Radiation Protection Section  
Division of Facility Services  
Department of Human Resources

October 22, 1986

Background

Under the Radiation Protection Act and an agreement with the U.S. Nuclear Regulatory Commission, the Department of Human Resources is responsible for the State's comprehensive radiation protection program. In 1975 the Act created the North Carolina Radiation Protection Commission which is responsible for the promulgation of rules governing the licensing, registration, receipt, possession, use, transfer, transportation and disposal of all radiation sources in North Carolina.

Radiation Protection Commission

The North Carolina Radiation Protection Commission was created in 1975 when the North Carolina Radiation Protection Act (GS 104E) was adopted to replace the earlier Ionizing Radiation Law (GS 104C). The Commission is composed of eleven (11) Public Voting Members and ten (10) Ex Officio Members. The Public Voting Members are appointed by the Governor to staggered four-year terms to represent specific radiation use fields as provided in GS 104E-8. The Ex Officio Members are appointed by the Governor to represent specific boards, commission and departments as provided in GS 104E-8. The Ex Officio Members serve until replaced or removed from the body they represent.

The Commission has broad rulemaking authority over the receipt, possession, use, transfer, transportation and disposal of radiation sources (both X-ray and radioactive material/waste); and has adopted comprehensive rules which are codified in 10 NCAC 3G. These rules provide for the licensing and regulation of radioactive material facilities and for the registration and regulation of all X-ray facilities. As required by the agreement between the Governor and the U.S. Nuclear Regulatory Commission, all rules governing radioactive material must be consistent and compatible with those of the NRC as well as no less restrictive in areas of environmental or public health protection.

Provisions of GS 104E-15 also give broad authority to the Commission in the area of regulation of radioactive material/waste transportation. This authority includes the designation of routes over which radioactive material may be transported. While the Commission has not adopted such route designation rules, it would appear to be adequately empowered to do so within the bounds of State authority reflected in the rules of the U.S. Department of Transportation regarding spent nuclear fuel transportation. Under the provisions of GS 104E-15, the Commission has adopted substantially all federal radioactive

material/waste transportation rules by reference; and has specifically adopted and codified rules equivalent to those of the NRC which provide for prior notification to the State for all spent nuclear fuel shipments and for certain higher level radioactive waste shipments. These Commission rules are found in 10 NCAC 3G .2416, General Licenses: Transportation.

Unlike specific licenses for which one must apply prior to receiving any radioactive material, general licenses are issued in the rules of the Commission. By the receipt of radioactive material or conduct of activities authorized by the general license, one automatically becomes a licensee of the Department and is subject to all requirement stated in the general license.

### Department of Human Resources

Since 1964 the Department's Radiation Protection Section has been responsible the State's sole radiation monitoring and control program, except for the Department's program for enforcement of drinking water standards which include radioactivity limits and the Department of Natural Resources and Community Development involvement with enforcement of Environmental Management Commission ambient air and water standards which include radioactivity limits. With respect to the ambient standards for radioactivity in air, surface water and groundwater of the Environmental Management Commission, it is incumbent upon the Radiation Protection Commission to adopt rules for licensure of radioactive material facilities which will ensure that licensed facilities will not operate in violation of such standards. This is substantially the same relationship as exists between the U.S. Nuclear Regulatory Commission and the U.S. Environmental Protection Agency.

The overall mission of the Radiation Protection Section is to protect the public, radiation workers, patients (in the case of human uses of radiation sources) and the environment from radiation hazards. The Section is either responsible for or directly involved with essentially all of the State's radiation control and monitoring activities.

The Section's present programs include:

#### 1. X-ray Regulation

Under Radiation Protection Commission rules, the Section maintains a registration, inspection and enforcement program for all non-federal X-ray equipment. This encompasses nearly 4,000 facilities with 10,000 X-ray machines, the majority of which are for healing arts or human use. These activities and associated rules are directed at

- a. occupational radiation protection;
- b. public and patient radiation protection; and
- c. control of receipt, possession, use, transfer and disposal of X-ray producing machines.

Under Department rules all registrants pay annual fees to support the inspection, enforcement and related aspects of this program.

## 2. Radioactive Material and Accelerator Facility Regulation

Under Radiation Protection Commission Rules and an agreement with the U.S. Nuclear Regulatory Commission, the Section is responsible for licensing, inspection and enforcement for all radioactive material and accelerator facilities, except for federal agencies and nuclear reactors. This encompasses over 800 facilities which are presently authorized to have radioactive material. These activities and associated rules are directed at:

- a. occupational radiation protection;
- b. public and patient (in the case of medical uses) radiation protection; and
- c. control of receipt, possession, use, transfer and disposal of radioactive material and accelerators.

Except as authorized by Commission rules, no person may receive, possess, use, transfer or dispose of radioactive material unless authorized to do so by a radioactive material license issued by the Section. The Section will not issue such a license until the applicant demonstrates:

- a. adequate trained personnel;
- b. adequate facilities, equipment and procedures for possession, handling, control, transfer, and disposal of all radioactive material;
- c. ability to comply with all Commission rules;
- d. assurance that workers, public and environment are protected from radiation hazard; and
- e. means for disposal of all radioactive material.

Comprehensive rules are under development to address all aspects of low-level radioactive waste disposal including: monitoring, engineered barriers, disposal technology, site suitability, funding of the long term care Radiation Protection Fund, bonding/insurance, environmental protection, site closure, occupational protection, etc. Broad Radiation Protection Commission and Departmental statutory authority are provided in G.S. 104E to deal with every radiological aspect of radioactive waste disposal facility licensing, monitoring and regulation.

It is noteworthy that all radiological aspects (i.e., occupational protection, acquisition of radioactive material, disposal, monitoring, operating/emergency procedures, environmental protection, bonding/insurance, closure, reporting, etc.) are covered by a single license through a single licensing process.

The inspection, enforcement and related aspects of this program are supported by annual fees imposed by the Department on all licensees.

## 3. Environmental Radiation Monitoring

The Section maintains the State's only environmental radiation monitoring and surveillance program with laboratory analyses performed by the

Department's central laboratory. This program's monitoring and surveillance programs fall into the following categories:

a. Major Nuclear Facilities

The Section presently maintains environmental surveillance programs for the Brunswick Nuclear Plant, the McGuire Nuclear Station, the Shearon Harris Nuclear Plant and the General Electric Reactor Fuel Manufacturing facility in Wilmington. At such time as a low-level radioactive waste facility may be licensed, it would be deemed to be a major nuclear facility and would be the subject of an extensive environmental radiation surveillance program.

b. Other Facilities

The Section also maintains surveillance programs for a variety of other facilities. These include: four closed private low-level radioactive waste disposal sites formerly operated by four universities, two phosphate mining/milling facilities with potential naturally occurring radioactive material problems, several Section licensees with potential radiological impact on the environment, and a small reactor facility at N.C. State University.

c. Statewide Monitoring

The Section maintains a statewide monitoring network to measure ambient radiation and radioactivity levels in air, water and other environmental media. This network is part of the surveillance program for detection of radioactive fallout from nuclear weapons tests and major events such as the recent Russian reactor accident.

d. Special Monitoring and Surveillance

As circumstances dictate at the time, the Section also conducts special monitoring and surveillance activities. Examples include: radioactive contamination at the Brunswick County Landfill in Southport, natural radiation and radioactivity phenomena such as indoor radon, stepped up monitoring for fallout during major events, Wayne County nuclear weapons accident site, etc.

4. Radiation Emergency Response and Planning

The Section, under the coordination of the Department of Crime Control and Public Safety when two or more agencies are involved, is responsible for planned response to all radiation accidents and emergencies. This includes participation in periodic exercises which are required to demonstrate the ability of the State to respond to nuclear plant accidents. The Section typically responds to no more than 12 real radiation accidents per year, almost all of which are of negligible radiation significance. The nuclear plant aspect of this responsibility are partially supported through fees imposed on nuclear utilities.



### Rules and Activities Relative to High-Level Waste Transportation

Under provisions of 10 NCAC 3G .2416, prior notification to the State Highway Patrol is required for any shipment of high-level radioactive waste, spent nuclear fuel, or other nuclear waste requiring DOT Type B (accident resistant) containers. The State Highway Patrol, in addition to any internal notification procedures, provides confidential copies of all notifications to the Radiation Protection Section. Based on several years of experience, this typically provides the Section with no less than about one week prior notice.

While the Section has conducted a number of inspections of such shipments under existing authority in GS 104E-15, the Section does not maintain a program for the routine inspection of shipments for which prior notification is required, nor has it been funded or staffed for such a purpose. At the same time, the present Commission rules and statutory authority are major resources in the Section's routine response to all radioactive material transportation accidents or incidents.

To date there have been no recorded accidents involving either high-level radioactive waste or spent nuclear fuel shipments in North Carolina. Of the very few accidents involving such shipments nationally, none have resulted in radiation injury or radioactive contamination.

The Radiation Protection Section maintains personnel on-call on a 24-hour basis for response to any type of radiation incident. Especially in the case of transportation related accidents, initial notification is routinely from the State Warning Point operated by the State Highway Patrol. Such notification is typically immediate since two Section staff members carry pagers at all times.

When an accident occurs, the State Highway Patrol notifies the Radiation Protection Section as well as the Division of Emergency Management which coordinates all State agency response to major accidents. The Section staff establishes the most direct communication possible with the trooper at the accident scene to access any needed manifest, label or radiation level data; and to make protective action recommendations. As needed, the Section may also prepare to dispatch its own emergency response personnel and/or its mobile radiation laboratory. Since the Section does not have regional personnel, arrangements have been made with a large number of health physicists or other radiation experts around the State who have volunteered to assist the Section during accidents or emergencies.

### Budget and Staffing

The Section presently has an authorized total staff of 27 positions and an underlying continuing budget of around \$900,000 annually. (See attached organization and staffing chart) Of this amount about 40 percent is supported by fee revenues paid by licensees, registrants and nuclear plants.

Attachment

JOHN P KOZIER

## SOUTHERN STATES ENERGY BOARD

REMARKS TO N.C. HIGH-LEVEL RADIOACTIVE WASTE DISPOSAL STUDY COMMITTEE

OCTOBER 23, 1986

SSEB IS A 17-MEMBER ENERGY AND ENVIRONMENTAL INTERSTATE COMPACT ORGANIZATION WITH THE MANDATE FROM ITS BOARD OF GOVERNORS AND STATE LEGISLATORS TO WORK ON RADIOACTIVE MATERIALS ISSUES. WE HAVE NOW BEEN WORKING FOR SEVERAL YEARS ON LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT COMPACTS, <sup>OTHER LLW ISSUES, INCLUDING AUTOMATED TRACKING SYSTEMS,</sup> LLRW DISPOSAL FACILITY SITING, HIGH-LEVEL CIVILIAN WASTE TRANSPORTATION AND DEFENSE TRANSURANIC WASTE TRANSPORTATION ISSUES.

WE ARE CURRENTLY WORKING WITH DOE'S OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT TO REVIEW ISSUES RELATING TO THE TRANSPORT OF NUCLEAR SPENT FUEL AND HIGH-LEVEL WASTE UNDER THE NWPA OF 1982 AND TO ASSESS THE IMPACT OF THESE ISSUES ON THE SOUTHERN STATES. OUR INTENT HAS BEEN

TO IDENTIFY AND PROVIDE ASSISTANCE IN RESOLVING TRANSPORTATION CONCERNS

AND TO FOSTER BETTER PUBLIC UNDERSTANDING OF TRANSPORTATION ACTIVITIES.

WE ARE ESSENTIALLY ASSISTING, ALONG WITH OTHER REGIONAL ORGANIZATIONS, IN THE ASSESSMENT OF INSTITUTIONAL ISSUES AND OTHER FACTORS RELATED TO THE ESTABLISHMENT OF A TRANSPORTATION SYSTEM. TO THIS END WE HAVE DONE SEVERAL THINGS SO FAR, INCLUDING:

TO TAKING A DOCUMENT CALLED THE SPENT NUCLEAR FUEL + HLW TRANSPORTATION PRIMER, PRODUCED BY THE WESTERN INTERSTATE ENERGY BOARD, AND DEVELOPING A SIMILAR DOCUMENT ON HIGH-LEVEL WASTE TRANSPORTATION FOR USE IN EDUCATING

SSEB MEMBER STATE OFFICIALS AND THE PUBLIC ON INSTITUTIONAL MATTERS AFFECTING THE TRANSPORTATION OF SPENT FUEL AND RADIOACTIVE WASTE.

WE HAVE DISCOVERED THROUGH WORKING ON THE MODEL DOCUMENT GIVEN TO US THAT THERE WERE ERRORS AND INCONSISTENCIES AND, FRANKLY, TOO MUCH INFORMATION TO BE EASILY ASSIMILATED BY ANY BUT THE MOST DEDICATED READER. AS A RESULT, WE HAVE SOLICITED COMMENTS FROM OFFICIALS IN OUR MEMBER STATES, FROM INDUSTRY AND FROM OTHER INTERESTED PARTIES SO THAT WE CAN PARE DOWN THE DOCUMENT AND CREATE A PRIMER IN THE TRUER SENSE OF THE WORD.

PART OF OUR MANDATE WAS TO ADAPT THE PRIMER TO ADDRESS AREAS OF PARTICULAR REGIONAL INTEREST, SUCH AS THAT OF MONITORED RETREIVABLE STORAGE. I SEE ON THE AGENDA THAT MRS WILL BE DISCUSSED LATER SO I WON'T GET INTO THE SUBJECT ANY FARTHER THAN TO SAY THAT IT IS AN ISSUE OF GREAT INTEREST AND CONCERN TO THE SOUTHERN STATES. ~~THE~~ <sup>POSSIBLY</sup> ~~IMPLICATIONS OF~~ HAVING AN MRS FACILITY IN THE REGION BEAR DIRECTLY ON INCREASED LEVELS OF HIGH-LEVEL NUCLEAR MATERIALS TRANSPORTATION.

ANOTHER KEY ELEMENT OF OUR WORK WITH THE STATES AND DOE/OCRWM IS THE REQUIREMENT OF <sup>PREPARING</sup> ~~PRESENTING~~ A SO-CALLED "ATLAS OF ROUTES" FOR THE REGION. SSEB IS IN NO WAY PICKING SHIPPING ROUTES BUT IS SIMPLY USING THE CURRENT FEDERAL TRANSPORTATION CRITERIA EMBODIED IN THE U.S. DOT RULE HM-164 THAT SPECIFIES INTERSTATE HIGHWAYS AS THE PREFERRED ROUTES FOR MOST HL NUCLEAR MATERIALS TRANSPORTATION VIA TRUCK. STATES WILL HAVE THE RIGHT TO DESIGNATE ALTERNATE ROUTES WHERE APPROPRIATE. WHAT WE ARE DOING IS SIMPLY HIGHLIGHTING POTENTIAL NHPA SHIPPING ROUTES IN THE REGION FOR FURTHER ANALYSIS.

THIS ANALYSIS PROJECT ISSUE  
 TO ASSIST US WITH ~~THESE~~ AND OTHER ~~ISSUE~~ PAPERS THAT WE ARE  
 DEVELOPING FOR DOE/OCRWM, WE WROTE OUR MEMBER STATE GOVERNORS  
 LAST DECEMBER ASKING THEM TO NOMINATE AN APPROPRIATE  
 REPRESENTATIVE TO AN ADVISORY COMMITTEE ON HIGH-LEVEL RADIOACTIVE  
 MATERIALS TRANSPORTATION. <sup>WE ULTIMATELY CONVENED A GROUP REPRESENTING STATE AGENCIES FROM</sup> THIS BODY HAS MET TWICE, FIRST IN  
 MAY OF THIS YEAR AND AGAIN IN SEPTEMBER, BOTH TIMES IN ATLANTA. <sup>TRANSPORTATION TO RADW TO EMERGENCY RESPONSE TO EMERGENCY OFFICES. WE HAVE ONE TRUCK MEMBER FROM W. NC.</sup>  
 FOR YOUR INFORMATION, N.C.'S REPRESENTATIVE DESIGNATED BY GOV.  
 MARTIN IS EVAN BRUNSON OF THE DEPT. OF NATURAL RESOURCES AND  
 COMMUNITY DEVELOPMENT.

THIS COMMITTEE HAS DISCUSSED A NUMBER OF ISSUES AT ITS  
 INITIAL MEETINGS AND HAS DIRECTED SSEB TO LOOK AT SOME OF THEM  
 FURTHER. WE ARE ~~SLIGHTLY~~ ON HOLD ON ~~THAT~~ OF MRS, THE MOST REGIONAL  
 OF ALL THE HL NUCLEAR WASTE TRANSPORT ISSUES, BECAUSE OF THE  
 COURT DELIBERATIONS STILL UNDERWAY IN WASHINGTON. ONCE THE  
 COURT RULES ON TENNESSEE'S SUIT TO BLOCK MRS, WE'LL KNOW WHAT WE  
 NEED TO DO NEXT. DOE'S ~~ATTITUDE~~ <sup>ATTITUDE</sup> HAS BEEN TO WAIT OUT THE SUIT, <sup>+ SEE WHAT</sup> ~~SO WE CAN~~ <sup>HAPPEN</sup>

(OUR COMMITTEE HAS NOTED THAT IS)  
 O ANOTHER ISSUE <sup>UNIQUE</sup> TO THE REGION ~~THAT OUR COMMITTEE HAS~~  
~~NOTED~~ IS THE EFFECT OF MRS ON INCREASING OPPORTUNITIES FOR  
 INTERMODAL HLW TRANSPORT THROUGH TRANSFER TO AND FROM BARGE  
 SYSTEMS;

O OUR STATES HAVE SUGGESTED THAT SSEB HELP ESTABLISH A DOT-  
 APPROVED METHODOLOGY FOR ROUTING. THIS IS AN IMPORTANT ISSUE  
 BECAUSE NO ONE HAS YET AGREED <sup>ON</sup> ~~TO~~ SUCH IMPORTANT POINTS AS UNIFORM  
 INSPECTION CRITERIA, HOW OFTEN SHIPMENTS WILL BE INSPECTED ALONG  
 THE ROUTE AND WHO WILL DO IT, WHETHER EACH STATE OR ONLY AT THE  
 START AND FINISH OF A SHIPMENT.

O THE SOUTHERN STATES ARE INTERESTED IN THE CONSIDERATION OF POTENTIAL SHIPMENTS FROM ABROAD ENTERING EAST COAST PORTS, AS WELL AS TERRORISM AS A WILD CARD ELEMENT OF THE SAFEGUARD ISSUE.

O THEY ARE INTERESTED IN EMERGENCY RESPONSE AND DOE COORDINATION WITH THE FEDERAL EMERGENCY MANAGEMENT AGENCY ON EMERGENCY PREPAREDNESS AND RESPONSE CAPABILITIES.

O OUR COMMITTEE MEMBERS ARE PARTICULARLY INTERESTED IN THE ISSUE OF USING OVERWEIGHT TRUCKS TO SHIP OVERWEIGHT CASKS. THEY VOTED AT THE LAST MEETING NOT TO PRECLUDE THE OPTION OF USING OVERWEIGHT TRUCKS, BUT THIS WAS IN A CONTEXT OF NOT PRECLUDING ANY OPTIONS FOR THE PRESENT, SO LONG AS DOE IS UNDECIDED ABOUT SOME OF ITS CONCERNS SUCH AS CASK DESIGNS AND PROGRAM MILESTONES. OUR STATE COMMITTEE MEMBERS HAVE SUGGESTED THAT THE OVERWEIGHT OPTION WOULD BE MORE ACCEPTABLE TO THE STATES IF AN INTERMODAL LINK EXISTED THAT WAS NOT OVERWEIGHT, SUCH AS SHIPPING A FEW MILES OVERWEIGHT VIA TRUCK TO A RAIL LINE FOR RAPID SHIPMENT OUT OF THE STATE. AND, TURNING THIS EXAMPLE AROUND, SOME STATES SUCH AS S.C. HAVE SUGGESTED THAT DOE IMPRESS THE ICC TO KEEP SOME OF THE LESS-PROFITABLE FEEDER RAIL LINES THAT SERVE NUCLEAR POWER PLANTS OPEN SO THAT ~~SHIPMENTS CAN GET ON RAIL LINES AND OFF HIGHWAYS AS MUCH AS POSSIBLE.~~ ~~SHIPPING BECOMES LESS OF A WEIGHT PROBLEM.~~

O THE SOUTHERN STATES ARE AFFECTED BY DEFENSE TRANSURANIC WASTE SHIPMENTS FROM SUCH PLANTS AS SAVANNAH RIVER AND ORNL. THESE SHIPMENTS TO THE WIPP SITE IN NEW MEXICO ARE SCHEDULED AT PRESENT FOR AS EARLY AS NEXT YEAR. SSEB HAS BEEN INVOLVED IN PROVIDING SOME INSTITUTIONAL DATA TO THE JIO IN NEW MEXICO REGARDING THESE SHIPMENTS AND WILL BE WORKING WITH JIO ON INSTITUTIONAL ISSUES AS THE PROGRAM UNFOLDS.

JIO/OCRW  
- similar to  
- in invol. of  
- rep. of  
- trans. p.  
- tech. eval.  
- institu. act.

4  
Waste System  
Program -  
the WIPP  
program.  
JIO is part of  
effort to work with  
the states to identify  
the concerns about  
shipments.

Env. Gov. + the  
Eval. + the  
all work on  
with DOE's  
Waste System  
Program -  
the WIPP  
program.

O OUR STATES ARE CONCERNED ABOUT PROPER PUBLIC EDUCATION ON BOTH DEFENSE AND CIVILIAN WASTE SHIPMENTS. DOE HASN'T MADE UP ITS MIND HOW TO GO ABOUT DOING THIS IN A COMPREHENSIVE MANNER, BUT THE USE OF REGIONAL GROUPS OF KEY STATE OFFICIALS, INDUSTRY REPRESENTATIVES AND PUBLIC INTEREST GROUP REPS. IS A START. THE THEORY IS THAT THESE REGIONAL GROUPS, SUCH AS THE SSEB ADVISORY COMMITTEE, FEED THEIR IDEAS AND CONCERNS TO DOE THROUGH THE COMMITTEE AND ON TO NATIONAL FORUMS THAT DOE WOULD SET UP. THE COMMITTEES ALSO SERVE AS CONDUITS OF INFO. TO THE STATES ON THE DIRECTION OF DOE POLICY AND THE STATUS OF DOE IMPLEMENTATION PLANS FOR ITS CIVILIAN AND DEFENSE WASTE PROGRAMS.

FROM THE POINT OF VIEW OF SSEB AND ITS COMMITTEE, WE WOULD BE HAPPY TO ENTERTAIN ANY SUGGESTIONS FROM OUR STATE LEGISLATORS. WOULD YOU, FOR EXAMPLE, LIKE TO SEE SOME SORT OF REGIONAL FORUM ON THESE ISSUES PRIMARILY FOR LEGISLATORS. IF SO, SAY THE WORD, AND WE'LL PRESENT THE IDEA TO THE PEOPLE IN THE CIVILIAN AND DEFENSE WASTE PROGRAMS AT DOE.

THE PROBLEM OF TRANSPORTING HIGH-LEVEL NUCLEAR WASTE IS A DIFFICULT ONE, AND WE HAVE REALLY ONLY MADE EARLY ~~MAJOR~~ STRIDES TOWARD ANY KIND OF CONSENSUS, BUT WE BELIEVE THAT CONSENSUS IS MORE LIKELY TO BE REACHED ON A REGIONAL BASIS IN THE FIRST INSTANCE, AND THAT MOMENTUM CARRIED TO A NATIONAL CONSENSUS. WHEN THAT WILL HAPPEN IS ANYBODY'S GUESS, BUT OTHER GROUPS BESIDE THE ~~LEGISLATIVE~~ MEMBERS OF THIS LEGISLATIVE<sup>STUDY</sup> COMMITTEE ARE OUT THERE RIGHT NOW TRYING TO DO THEIR BEST TO COME TO GRIPS WITH THIS PROBLEM THAT WE HAVE TO SOLVE.

# The Blue Ridge Environmental Defense League

Janet M. Hoyle  
(919) 982-2691

PO Box 88  
Glendale Springs, NC 28629

October 23, 1986

## RECOMMENDATIONS TO THE LEGISLATIVE RESEARCH COMMISSION

on

### HIGH-LEVEL RADIOACTIVE WASTE TRANSPORTATION IN NORTH CAROLINA

The Blue Ridge Environmental Defense League recommends state regulation of high-level nuclear materials transportation, to include:

1. Designation by the NC Radiation protection Commission (RPC) of alternate preferred highway routes:
  - a. In accordance with federal Department of Transportation (DOT) guidelines;
  - b. After completion of risk analyses of alternate routes; and
  - c. After consultation with affected localities and other affected states
2. Designation by the RPC of rail routes based on safety analysis

Rationale: Rail route selection is currently left to shippers and carriers. Section 205 of the Federal Railway Safety Act (1962) authorizes state regulation of hazardous materials transportation (1) if DOT has not adopted a rule covering the subject matter and (2) if the state rule addresses a local safety hazard. State rail route restrictions have a good chance of being upheld by DOT if the state bases designations on a safety analysis patterned after DOT guidelines for highway route designations.

3. Designation by the RPC of safe havens for planned and emergency stops after:
  - a. Consultation with affected localities;
  - b. Analysis of radiation risks; and
  - c. Determination of monitoring and policing needs
4. Required use of major thoroughfares
5. Appropriate penalties
6. Traffic control and other standard regulations



7. Permits for shippers based on safety concerns
8. Inspections and escorts by state personnel of all irradiated fuel shipments to be conducted with insignificant delays

Rationale: A General Accounting Office study states that in 1979 there were only 28 federal inspectors for all of the railroads in the country and that there were only 47 federal inspectors for the 1.3 million motor vehicles transporting hazardous materials. The GAO study reports that in 1979 the DOT conducted an inspection of vehicles carrying hazardous materials along the Mississippi River. DOT inspected 297 carriers and found 291 violations of federal hazardous materials transport regulations. Inspectors pulled 16 vehicles out of service.

Earlier this year DOT upheld Illinois' provisions for state inspections and escorts. DOT ruled that the twenty-minute delay does not constitute an impediment to interstate commerce.

9. A per vehicle fee of \$1000 to pay for state inspections, enforcement, and emergency response

Rationale: DOT recently upheld Illinois' fee of \$1000 per shipment because it is related to the costs of state services. The amount of North Carolina's fee should reflect our costs for inspections, escorts, enforcement, and emergency planning and management.

10. Requirement of additional driver training/experience for mountainous and other treacherous conditions

Rationale: According to the Office of Technology Assessment's Transportation of Hazardous Materials, 62% of hazardous materials transport accidents are caused by human error.

11. Requirement from carriers and/or DCE of post notification of nuclear transports:

- a. To include information to be recorded by the carrier anyway;
- b. To be used to upgrade emergency response; and
- c. To be submitted in periodic aggregate reports

12. Mandatory prenotification of local emergency management personnel by state emergency management personnel

13. Expansion of state emergency management programs to include public information, evacuation drills, and medical centers capable of handling radiation injuries

14. Requirement of a spill prevention and mitigation plan to be submitted by shippers in advance

- a. After identification by the state and localities of unique local conditions which render accident sites difficult to access; and
- b. After identification of environmentally sensitive areas along routes



## APPENDIX H





## North Carolina Department of Crime Control and Public Safety

James G. Martin, Governor  
Joseph W. Dean, Secretary

Division of Emergency Management  
116 W. Jones St., Raleigh, N. C. 27611  
(919) 733-3867

November 14, 1986

### MEMORANDUM

TO: Members of the High-Level Radioactive  
Waste Disposal Study Committee

FROM: Joseph F. Myers, Director *JFM*

SUBJECT: Recommendations - Transportation of high-level  
radioactive waste in the State

1. Routing: The Radiation Protection Commission, the N.C. Department of Transportation and the State Highway Patrol should be involved in the decision making concerning the establishment of the designated routes.
2. Concept of Operations: The State Emergency Response Team (SERT) has been most effective in responding to all emergencies and will continue its present plan of operations.
3. Notification: The procedure currently followed is effective and dependable. Written notice and specifications are sent to the State Highway Patrol. Notification is then forwarded to the Radiation Protection Section; the State Warning Point and the affected Troop Commander of the Highway Patrol.
4. Planning and Training: We have effective planning and training in all counties at present. Once established routes are determined, indepth and specific planning and training will be concentrated in the counties affected.
5. Laws: Current laws are adequate.

NOTE: We feel that there are no significant deficiencies in the method procedures now used in transporting high-level radioactive waste in the State.

Report to

The High Level Radioactive Waste  
Disposal Study Committee

November 14, 1986

From: Gerald R. Fleming, P. E., Director  
Occupational Safety & Emergency Planning  
Department of Transportation Member  
Radiation Protection Commission

The Division of Highways is on record in support of the State Radiation Protection Commission to designate any needed alternate routing for shipments of high level radioactive waste. Our people can provide the necessary engineering analysis and risk assessment that is required by U. S. Department of Transportation regulations. We look to the Radiation Protection Section for guidance to provide for specific needs. This includes radiological monitoring support on a statewide basis. We maintain a close compatible working relationship with this Section and other representatives on the State Emergency Response Team.

Planning for and evaluating our emergency response capability is a continuing effort. Rapid response to spills or impediments to traffic is of paramount importance to our people.

Selection of routes for transporting hazardous materials may also be of prime concern in the near future. In the Congress, H. R. 4612 would provide grants for state and local governments to select specific routes for this purpose. This bill would make the National Highway Traffic Safety Administration responsible for hazardous materials transportation safety.

The U. S. Department of Transportation is in the process of revising the Motor Carrier Safety Rules. These changes are presumably to improve driver training requirements and spill response capability. Any changes in these rules will become a matter of compatibility for enforcement in North Carolina.

If there is other more specific information needed, please let me know.

## APPENDIX I



A JOINT RESOLUTION STATING NORTH CAROLINA'S OPPOSITION TO THE SELECTION OF AREAS WITHIN THE STATE FOR CONSIDERATION IN THE SITING OF A HIGH-LEVEL RADIOACTIVE WASTE REPOSITORY PURSUANT TO THE NUCLEAR WASTE POLICY ACT OF 1982; AND URGING CONGRESS TO REPEAL THE PROVISIONS OF THE NUCLEAR WASTE POLICY ACT OF 1982 REGARDING THE SITE-SELECTION WORK ON A SECOND HIGH-LEVEL RADIOACTIVE WASTE REPOSITORY.

Whereas, the United States Department of Energy designated two areas in North Carolina as potential high-level radioactive waste repository sites on January 16, 1986; and

Whereas, North Carolina reviewed the Department of Energy's Draft Area Recommendation Report, dated January 1986, which recommended the Rolesville area and the Elk River area as potential sites, and found significant inadequacies in the geologic characterizations, environmental characterizations, and methodology of the Report; and

Whereas, since much of the groundwater in the Rolesville area is obtained from fractures in the bedrock which extend to an unknown depth and are interconnected, escape of radioactive material could contaminate this major source of groundwater; and

Whereas, the Department of Energy has ignored the presence of two population centers in the Rolesville area which is one of the fastest growing areas in the Southeast; and

Whereas, the Elk River area lies within one of the most seismically active regions in the eastern United States; and

Whereas, a repository in the Elk River area would be extremely detrimental to the Smoky Mountains National Park and the Blue Ridge Parkway, two protected areas having national and international significance; and

Whereas, state highways and city streets in either the Rolesville area or the Elk River area would be utilized for the transportation of wastes to a storage site, further increasing the danger to local life and property; and

Whereas, on May 28, 1986 the Department of Energy announced that it was postponing indefinitely site-specific work for a second repository and that areas previously identified for a possible second repository were no longer under active consideration; and

Whereas, the Department of Energy further indicated that in light of uncertain projections of spent fuel generation and the decline in generation, the first repository would be adequate in the foreseeable future and expending hundreds of millions of dollars on site identification of a second repository would be unsound fiscal management; and

Whereas, questions have been raised concerning the legality of the Department of Energy's decision to stop work on the siting of a second repository without action by Congress amending the Nuclear Waste Policy Act of 1982 to repeal those provisions of the Act regarding work on a second repository;

Now, therefore, be it resolved by the Senate, the House of Representatives concurring:



Section 1. The North Carolina General Assembly declares its opposition to the selection of areas within the boundaries of the State for the siting of a high-level radioactive waste repository because of concern over the effects to the citizens, environment, natural resources, land use, and economy of North Carolina.

Sec. 2. The North Carolina General Assembly urges Congress to amend the Nuclear Waste Policy Act, 42 U.S.C.A. Sec. 10101 (1982) by repealing all provisions regarding the site-selection of a second repository.

Sec. 3. The Secretary of State shall send certified copies of this resolution to the Secretary of the United States Department of Energy and to the members of the North Carolina Congressional delegation.

Sec. 4. This resolution is effective upon ratification.



## APPENDIX J



ACKNOWLEDGMENTS

The members of the High-Level Radioactive Waste Disposal Study Committee wish to thank the Department of Crime Control and Public Safety, the Department of Human Resources, the Department of Natural Resources and Community Development, and the Department of State Transportation for lending their invaluable assistance to the Committee.

